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The West Palaearctic species of *Galerucella* Crotch and related genera (Coleoptera, Chrysomelidae)

Contribution to the study of Galerucinae 6

Hans Silfverberg

Abstract

SILFVERBERG, HANS: The West Palaearctic species of *Galerucella* Crotch and related genera (Coleoptera, Chrysomelidae). — Notulae Entomol. 54:1—11. 1974.

The West Palaearctic genera and subgenera close to *Galerucella* are somewhat rearranged, *Neogalerucella* Chûjô being regarded as a subgenus of *Galerucella*, while *Pyrrhalta* Joann. and *Xanthogaleruca* Lab. are considered to be separate genera. Within *Galerucella* s.str. *G. vartiani* Lopatin is synonymized with *G. placida* Baly, and within *Neogalerucella*, *G. maculicornis* Fald. and *G. pici* Lab. are synonymized with *G. lineola* F., while *G. solarii* Burl. is considered a subspecies of *lineola*. *G. setulosa* J. Sahlb. is transferred to the genus *Lochmaea* Wse., and *G. quadrimaculata* Redtb. is also excluded from *Galerucella*; it probably belongs to *Diorhabda* Wse. or should have a genus of its own. Illustrations are provided of the aedeagi, including their internal sclerites.

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The genus *Galerucella* Crotch in the old sense (e.g. WEISE 1924, LABOISSIÈRE 1934, OGLOBLIN 1936 and CHUJO 1962) has lately been re-evaluated, first by GRESSITT & KIMOTO (1963) and then by WILCOX (1965, 1971); the results of these re-evaluations are shown in Table 1. Since, however, the characters used by these workers were almost the same,

it was considered worth while to check whether a study of hitherto unused characters would support the old or the new view. For this purpose the West Palaearctic species were investigated. These include the types of four genera/subgenera, the names of which thereby can be fixed, too. They are: *Galerucella* Crotch, type *nymphaeae* L., *Neogaleru-*

TABLE 1. Some recent arrangements of the genera and subgenera.

LABOISSIÈRE 1934	OGLOBLIN 1936	CHUJO 1962	GRESSITT & KIMOTO 1963	WILCOX 1965	WILCOX 1971
G:Hydrogaleruca	G:Hydrogaleruca	G:Galerucella	Galerucella	P:Galerucella	Galerucella
G:Galerucella	G:Galerucella	G:Neogalerucella	} Pyrrhalta	P:Neogalerucella	P:Neogalerucella
G:Xanthogaleruca	G:Xanthogaleruca	G:Xanthogaleruca		P:Xanthogaleruca	} P:Pyrrhalta
Pyrrhalta	G:Pyrrhalta	G:Pyrrhalta		P:Pyrrhalta	

cella Chûjô, type *tenella* L., *Xanthogaleruca* Lab., type *luteola* Müll. and *Pyrrhalta* Joann., type *viburni* Payk.

The ♂ genitalia provide fairly good distinguishing characters in most Chrysomelidae, but in almost every paper on the taxa considered here, only the outline, at most, has been figured. The aedeagi of some species were depicted with their internal sclerites by PALMÉN (1945); these species, however, all belong to *Galerucella* s.str. and *Neogalerucella*, and no conspicuous differences were found.

Special treatment is needed for studying the internal sclerites of the aedeagus. I first macerate the detached genitalia in 10 % KOH (room temperature, 1—2 days), then, having rinsed them with water, transfer them to alcohol and from that to clove oil. In clove oil the genitalia become highly transparent, and can be studied either in the oil, or if necessary, again transferred to alcohol, in which they rapidly become opaque. These procedures can be alternated as often as necessary, and the genitalia can be dried between studies. The inner sac (endophallus) can be everted by inserting a needle through the basal orifice, and expanded by pumping with a fine pipette at the basal orifice.

Acknowledgements. For this study it was necessary to see some material, including certain types, from other museums, too, besides the Helsingfors Museum. For providing me with such material I wish to thank Mlle Nicole Berti, Paris; Dr. M. Daccordi, Verona; Dr. F. Hieke, Berlin; Dr. C. Leonardi, Milan; Dr. L. N. Medvedev, Moscow and Dr. R. T. Thompson, London. I also wish to thank Prof. K. Mandl, Vienna, for providing me with information about some specimens in the Vienna Museum.

Taxa examined

Genus *Galerucella* Crotch, 1873

About twice as long as broad, parallel-sided or widening slightly back-

wards, covered with a fine, dense pubescence.

Head not enlarged, narrowing forwards, labrum and mandibles not conspicuously large; eyes spherical. Antennae reaching about half-way down the elytra, or (usually) shorter, 3rd segment distinctly longer than 4th, almost double the length of 2nd; outer segments at the most twice as long as broad.

Pronotum $1\frac{1}{2}$ —2 × as broad as long, a little narrower at fore-corners than at hind corners; each corner with a short tubercle. Hind margin at hind corners oblique (not acutely incised), somewhat concave in the middle. Disc partly shining, at least in depressions on either side of the middle strongly punctuate and covered with hairs; in some species the punctuated hairy area is expanded to include almost the whole disc.

Elytra more or less parallel-sided, densely and irregularly punctuated; pubescence dense, although not hiding the punctuation, hairs generally retrorse. Epipleura distinct to apical area.

Aedeagus slender, pointed at apex, with large ostium lacking a special cover (the covering membrane referred to by WILCOX 1965 is in fact the inner sac); basal spurs long and slender. Inner sac simple, with one sclerite.

Two subgenera can be recognized in this genus. Their similarities greatly outweigh their differences, and the more extreme forms are connected by intermediates, so it seems surprising that some authors have placed them far apart.

Subgenus *Galerucella* Crotch, 1873

This subgenus is recognized by the glabrous area in the middle of the pronotum, and the lack of spurs in the ♂ mid-tibiae. The prosternal ridge separating the fore coxae, which has been used as a subgeneric and even generic character, is distinct only in *G. nymphaeae*,

not in the other species. As regards the epipleura in the apical area, there seem to be no subgeneric differences. The species of this subgenus are somewhat more flattened, the elytral punctuation is a little finer, and sometimes the elytra are weakly ridged. The aedeagus is symmetrical, with a flattened sclerite.

Three species of *Galerucella* s.str. are found in the Western Palaearctic.

Galerucella nymphaeae L. (*sagittariae* Gyll.)

Aedeagus, Fig. 1. Distribution: Europe except the southernmost parts, Caucasus, Persia (south at least to Fars),

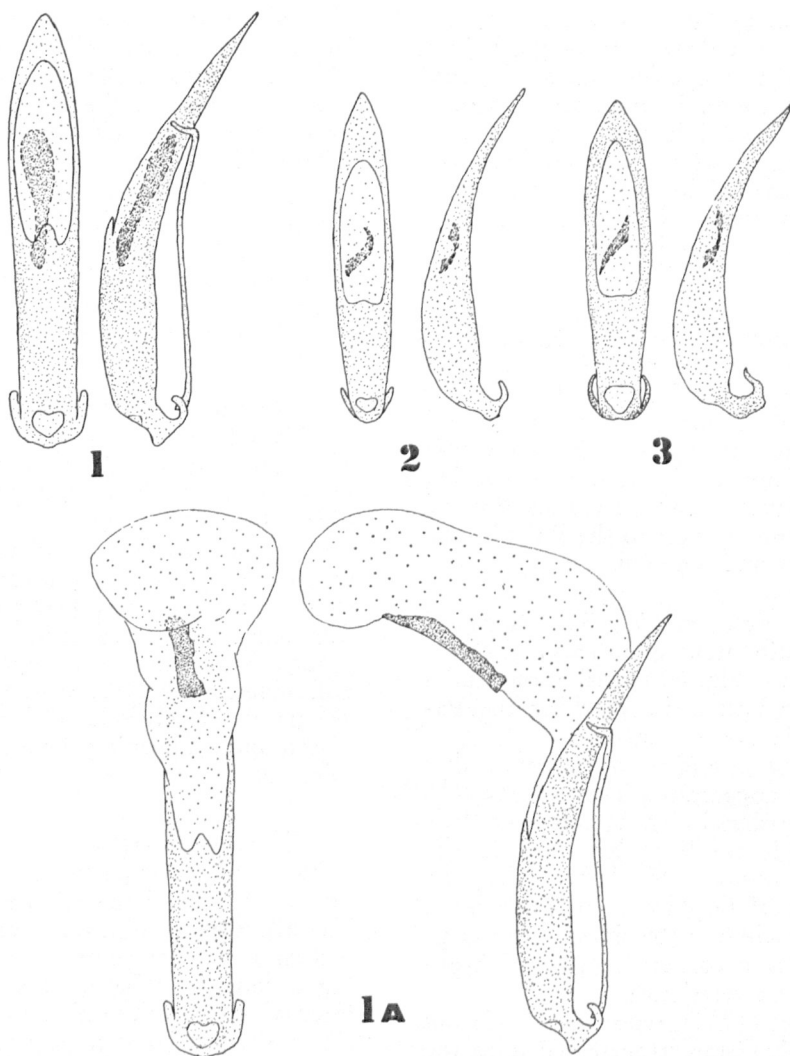


FIG. 1. Aedeagus of *Galerucella nymphaeae* L. (1A with sac everted). — FIG. 2. Aedeagus of *Galerucella grisescens* Joann. — FIG. 3. Aedeagus of *Galerucella placida* Baly.

Siberia, Central Asia (Kazakhstan, Uzbekistan), Mongolia, N. China (Inner Mongolia) and North America. In southern Ussuria, Korea and Japan replaced by the closely related *G. nipponensis* Lab.

Although WILCOX (1971) again lists *G. sagittariae* as a species, I entirely agree with the majority, who consider it a synonym of *G. nymphaeae*. PALMÉN (1945) suggested that it might be regarded as a subspecies, but as the two forms are found interspersed, I would not even accord it that rank. A biometric analysis of populations from different areas might reveal some differences. However, *G. nymphaeae* and *G. sagittariae* were both described from Sweden.

Galerucella grisescens Joann.

Aedeagus, Fig. 2. Distribution: Europe approximately from the Rhine to the (Severnaja) Dvina, southwards to NE Italy and eastern Ukraine (BROVDY 1973). Sicily (?). Another subspecies, *G. g. distincta* Baly, lives in Eastern Asia, extending west to the Baikal area, to Sichuan and Yunnan.

Galerucella placida Baly (*vartiani* Lopatin, new synonymy)

Aedeagus, Fig. 3. Distribution: India and South-East Asia, reaching the Palearctic in NE Afganistan.

G. grisescens and *G. placida* are rather similar in appearance. They can be told apart immediately by the colour of their legs, which are light brownish in the former, piceous in the latter. Also, the pronotum of *G. placida* is much more strongly incised at the sides, with sharper tubercles at corners, and the glabrous area is more restricted.

BECHYNÉ (1961), reporting *G. placida* from Afghanistan, transferred it to the genus *Lochmaea* and within this to the subgenus *Tricholochmaea*, because of a

slight thickening along the elytral margin. However, the other characters by which he then distinguished this species from the other *Tricholochmaea* spp. are typical of *Galerucella*, and the great overall similarity with *G. grisescens* in both external characters and genitalia should also be taken into account. LOPATIN (1963) also mentioned *placida* in *Tricholochmaea*. Later (LOPATIN 1967) he described *Galerucella vartiani* from NE Afganistan (Nuristan). I have not been able to locate the type, but the description is quite sufficient for synonymizing this new species with *G. placida*.

Another Indian species can also be included in *Galerucella* s.str., namely *G. birmanica* Jac. The characters described by MAULIK (1936) and the figures of the genitalia presented by VERMA (1969) place it close to *G. nymphaeae*.

Neogalerucella Chûjô, 1962

This subgenus is characterized by a pronotum that is glabrous only along some of the margins and by ♂ mid-tibiae that carry a spur. The fore coxae are in contact. The species of this subgenus are somewhat more convex, with somewhat stronger elytral punctuation. The subgenus can be divided into two groups, which differ in both external and aedeagal characters; however, they are clearly closely related, and I see no reason against keeping them in the same subgenus.

The *lineola* group

Externally, this group is recognizable mainly by the shape of the epipleura. The aedeagus is asymmetrical, with the ostium somewhat to the left, and ending a long way before the apex. The internal sac is microspiculate, and carries a slightly twisted sclerite.

Only one species is recognized in this group.

Galerucella lineola F. (*maculicornis* Fald., *pici* Lab., new synonymies)

Aedeagus, Fig. 4. Distribution: Europe, North Africa, Asia Minor, Caucasus and Transcaucasia, Siberia, NE China (Jilin) and Japan (Hokkaido).

Galleruca maculicornis, described by FALDERMANN (1837) from Transcaucasia, is definitely a synonym of *G. lineola*. This was ascertained from a study of the type, which is deposited in the Paris Museum, coll. Oberthur-Mniszech. The type of *Galerucella pici*, described by LABOISSIÈRE (1913) from Tunisia, which is also in the Paris Museum, in coll. Pic,

TABLE 2. Statistics of *G. lineola* from different areas

	n	length		breadth	
		\bar{x}	s	\bar{x}	s
Finland	30	105.2	7.7	60.1	5.1
Jakutia	20	106.5	8.4	58.6	5.4
Ireland	25	101.9	8.2	57.3	6.0
Holland	10	101.5	7.0	56.8	4.8
France	13	97.9	6.0	55.3	4.1
Morocco	30	94.1	6.8	54.6	5.6
(<i>pici</i> type)		86		50)
(smallest Moroccan specimen)		84		49)

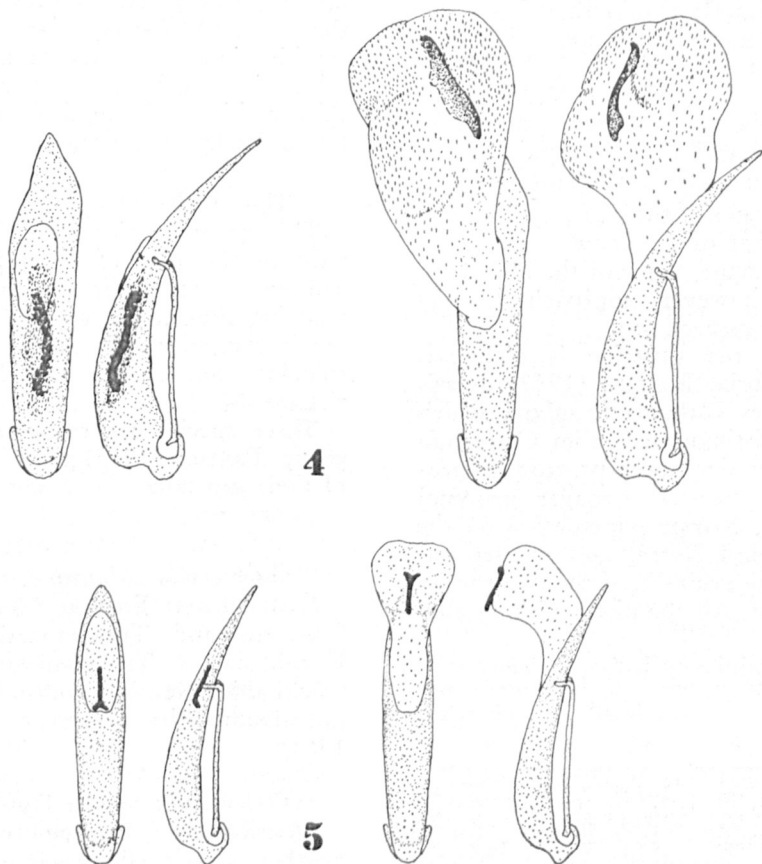


FIG. 4. Aedeagus of *Galerucella lineola* F. — FIG. 5. Aedeagus of *Galerucella tenella* L.

presented somewhat more of a problem. The characters mentioned by Laboissière fall within the variation of *G. lineola*, except that the specimen is conspicuously small, only 4.3 mm long and 2.0 mm broad. A biometric analysis was therefore made on samples of *G. lineola* from different parts of its range. Elytral length and breadth were measured with an eyepiece micrometer at 25 \times magnification (Table 2).

The analysis showed that there is a decrease in size from north to south. Although the *pici* type is still one of the smallest specimens, it does not stand out conspicuously among the material from North Africa. It would therefore seem that if the name *pici* were to be used, it would have to cover all the North African *lineola* specimens. Yet it seems to me that the North African population is merely the end of a cline, and I prefer not to assign a subspecific name to it.

The aedeagus of the *pici* type is otherwise like that of *G. lineola*, but somewhat more acute. Some of the Moroccan specimens, however, approach the *pici* type in this respect, too.

In Italy the situation is different. From Calabria, BURLINI (1942) described a species, *Galerucella solarii*, which could be distinguished from *G. lineola* by its larger size, more protruding pronotal hind corners, stronger pronotal impressions, coarser punctuation on the pronotum and elytra, and sparser pubescence; the genitalia of the two species were similar. All the distinguishing cha-

racters are relative, falling within the variation observed for *G. lineola* both in Italy and elsewhere.

Yet a biometric analysis revealed some interesting facts (Table 3). Specimens from the Italian Alps (in Piemonte and northern Lombardy) are quite as large as those from Northern Europe; this is probably due to environmental factors. Southwards the size decreases, and specimens from central Italy (Lazio and Abruzzi) are quite small. But the Calabrian specimens form a striking contrast to this trend. I have been able to study only a few such specimens, but even so I am prepared to suggest that this population forms a distinct subspecies, with the name *G. lineola solarii* Burl., new combination. The exact range of this subspecies cannot yet be determined; for this, a biometric analysis of further South Italian populations is necessary.

The *tenella* group

This group is also recognized externally by the shape of the epipleura. The aedeagus is symmetrical, with the ostium reaching close to the apex. The internal sac is comparatively small, not microspiculate, and carries a Y-shaped sclerite.

Three species are recognized in this group. PALMÉN (1945) gives illustrations of their genitalia.

Galerucella calvariensis L.

Distribution: Europe, North Africa, Caucasus and Transcaucasia, Siberia, Kazakhstan, Turkmenistan, Japan (Hokkaido, Honshu) and northern China (doubted by GRESSITT & KIMOTO 1963).

Galerucella pusilla Duft.

Distribution: Europe except the northern parts, Caucasus and Transcaucasia, Asia Minor, Syria, Siberia

TABLE 3. Statistics for Italian *G. lineola*

	n	length		breadth	
		\bar{x}	s	\bar{x}	s
Alps	26	105.8	7.2	63.7	4.8
Liguria	16	100.4	8.2	59.0	5.4
Central Italy	15	95.1	7.9	54.9	5.3
Calabria	4	110.8	7.9	65.5	3.4

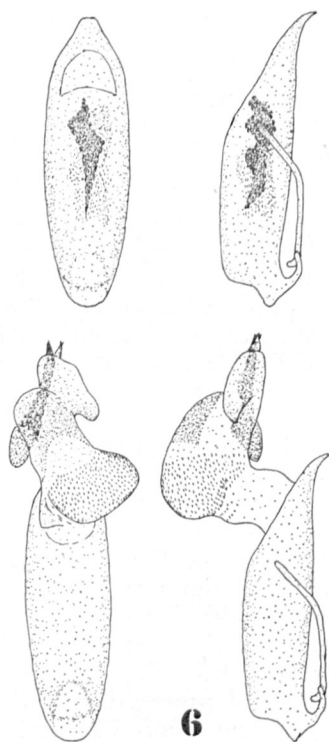


FIG. 6. Aedeagus of *Pyrrhalta viburni* Payk.

(western and central parts), Mongolia and China.

Galerucella tenella L.

Aedeagus, Fig. 5. Distribution: Northern and Central Europe, Siberia, Kazakhstan, Mongolia and northern China (Gansu, Qinghai).

Genus *Pyrrhalta* Joann., 1866

Robust, more or less parallel-sided, not depressed, covered with a fine and very dense pubescence.

Head enlarged, sides parallel from the eyes to the bases of the mandibles; labrum and mandibles conspicuously large; eyes somewhat flattened. Antennae reaching more than half-way down the

elytra, 3rd segment distinctly longer than 4th, almost twice as long as 2nd; outer segments about three times as long as broad.

Pronotum more than twice as broad as long, narrower at fore corners than at hind corners, each corner with a short tubercle; hind margin oblique at hind corners, strongly concave in the middle. Disc without glabrous areas, strongly punctuate and densely pubescent, the hairs generally directed outwards from the mid-line.

Fore coxae in contact. Male mid-tibiae carrying a short spur.

Elytra more or less parallel-sided, densely and irregularly punctuated, the punctuation largely hidden by the pubescence; pubescence very dense, the hairs orientated in different directions in different parts of the elytra, forming distinct fields. Epipleura ending shortly before the apical area with the fusing of the inner and outer margins.

Aedeagus rather short and robust, more or less truncate at the apex; ostium not very large, without special cover; basal spurs slender. Inner sac asymmetrical, with distinct lobes and a conspicuous sclerite.

Only one species is known from the West Palearctic.

Pyrrhalta viburni Payk.

Aedeagus, Fig. 6. Distribution: Europe except the northernmost and southernmost parts, Caucasus and Transcaucasia, western Siberia and northern Kazakhstan; another subspecies, *P. v. annulicornis* Baly, is found in eastern Siberia (Amur, Ussuri), NE China, Korea and Japan.

Genus *Xanthogaleruca* Lab., 1934

Body oblong, parallel-sided, not depressed, covered with a short and not particularly dense pubescence.

Head not enlarged, narrowed for-

wards; labrum and mandibles not conspicuously large; eyes spherical. Antennae reaching half-way down the elytra or less far, 3rd segment about as long as 4th or shorter, much less than double the length of 2nd, outer segments at most twice as long as broad.

Pronotum about twice as broad as long, much narrower at fore than at hind corners, base deeply incised at hind corners, only very slightly concave in the middle; sides rounded. Whole disc glabrous, strongly punctuated, with a round depression on each side.

Fore coxae in contact. LABOISSIÈRE (1934) stated that all tibiae lack spurs. However, as pointed out by WILCOX (1965), the male mid-tibiae carry a spur; it is sunk in an incision and may be hard to see.

Elytra strongly and densely punctuated, with moderately dense pubescence; hairs generally retrorse. Epipleura shortened, inner margin disappearing at the apical curve.

Aedeagus of variable shape, characterized by a long internal pectinate sclerite. Ostium comparatively small, largely covered by a more or less sclerotized membrane. Basal spurs short and broad.

Two West-Palaeartic species belong

to this genus, one of which is well known, the other known only from the holotype.

Xanthogaleruca luteola Müll.

Aedeagus, Fig. 7. Distribution: Central and Southern Europe, North Africa, Asia Minor, Caucasus and Transcaucasia, Persia, western Siberia, Central Asia, Afghanistan and northern China (questioned by GRESSITT & KIMOTO 1963). Introduced and established in North America; also introduced in the Maritime Province, USSR (MEDVEDEV 1956).

Xanthogaleruca subcoerulescens Wse.

This species is little known, so a short description may be useful.

Body shorter than in *X. luteola*, elytra about 1 1/2 times as long as broad. Colour yellowish brown, elytra with bluish sheen. (The sheen became more conspicuous when the specimen was moistened, and presumably it is so in living specimens, too.) Pronotum with an indistinct black spot in the middle; basal incisions rounded. Antennae comparatively short, only reaching about 1/4 of the length of the elytra; outer

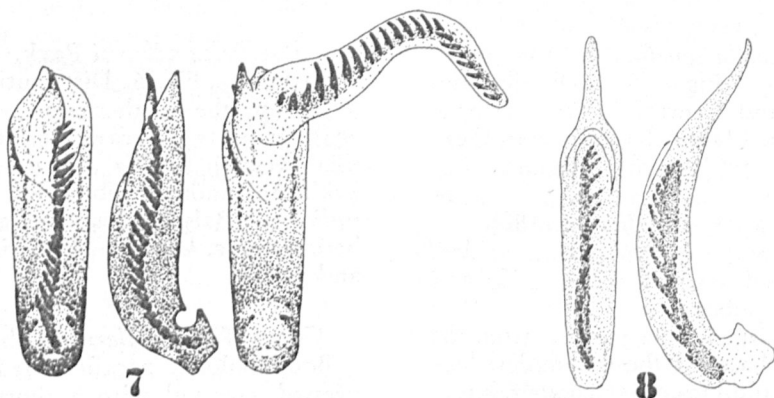


FIG. 7. Aedeagus of *Xanthogaleruca luteola* Müll. — FIG. 8. Aedeagus of *Xanthogaleruca subcoerulescens* Wse.

segments about 1 1/2 times as long as broad.

Length 5.0 mm, breadth 2.4 mm.

Aedeagus (Fig. 8.) rather slender, with apex strongly elongate. Pectinate sclerite with stem and teeth about equally sclerotized; no further sclerites could be discovered.

This species was described by WEISE (1884) from Amasia, northern Turkey. It is known only from the holotype, which is deposited in the Museum für Naturkunde der Humboldt-Universität, Berlin.

Two species hitherto listed as *Galerucella* must be excluded.

Galerucella setulosa J. Sahlb. This species, described by SAHLBERG (1913) from Palestine, must be transferred to the genus *Lochmaea* Wse. (*Lochmaeata* E. Strand is a quite unnecessary synonym, see ASLAM 1972). It has the same strongly convex general shape, the same thickened elytral margin and the same almost coarse pronotal and elytral punctuation as have the other *Lochmaea* species. From these it differs most conspicuously in having the marginal parts of the elytra hirsute, carrying long, dispersed, erect or semi-erect hairs — not a short, dense pubescence as in *Galerucella*. Neither can this species be included in *Tricholochmaea*, the elytra of which are densely pubescent as in *Galerucella*. Unfortunately, only the holotype, a female, is known (situated in the Helsingfors Museum). A study of the male genitalia might otherwise have given some indication of the exact systematic position of this species.

Galerucella quadrimaculata Redt. As far as I know, this species, described by REDTENBACHER (1850) from Persia (Fars), is known only from two cotypes, both in the Vienna museum. The original description reads:

Galleruca quadrimaculata Redt. Antennae sub 12-articulatae: articulo secundo minuto, tertio quartoque longis, aequalibus ultimo appendice articuliformi aucto; nigra, fortiter punctata; thorace transverso, postice rotundato, supra late canaliculato, foveolaque lata, profunda utrimque impresso; elytris luride-viridibus, macula axillari alteraque apicali flavis notatis. — Long. 2 3/4".

The specimens could not be had on loan, but Professor Mandl checked certain additional characters. He told me that the upper surface lacks hairs, that the elytra are not carinate, that the last abdominal segment of the male is once incised and that the 3rd and 4th segments of the antennae are large and almost triangular, while the next segments are short and about as long as broad. The claws are bifid. If such a species can be fitted into any of the known Palaearctic genera, this would be *Diorhabda* Wse., but a better solution would probably be to erect a separate genus for it. The species should be easy to recognize; the dark brown elytra with their greenish hue and round yellow axillary and apical spots are enough to set it apart.

Tricholochmaea Lab. comprises no West-Palaearctic species. Since, however, some species have been included

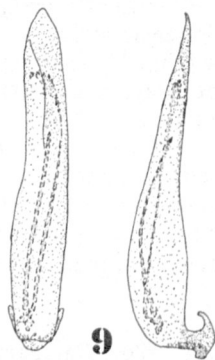


FIG. 9. Aedeagus of *Tricholochmaea semifulva* Jac.

there earlier, or might be included by uncritical use of the distinguishing characters mentioned in some works, I consider it appropriate to give a characterization based on the type species *Galerucella semifulva* Jac. from Japan.

Body rather short, less than twice as long as broad, strongly convex, more or less parallel-sided, and with a fine, rather dense pubescence.

Head not enlarged. Antennae reaching about half-way down the elytra or slightly less, 3rd segment about $1\frac{1}{2} \times$ as long as 2nd, 4th only slightly longer than 2nd, much shorter than 3rd; outer segments about $1\frac{3}{4} \times$ as long as broad, or shorter.

Pronotum twice as broad as long, broadest in the middle; corners rounded, but carrying a distinct tubercle, stronger in hind corners than in fore corners; base incised at hind corners, almost straight in the middle. Entire disc except for anterior margin coarsely punctuated, with short, dispersed hairs; on both sides of the mid-line with a depression, and the mid-line also slightly depressed.

Elytra densely and rather coarsely punctuated, with moderately dense pubescence, the hairs generally directed backwards and outwards; elytral margin with a slight thickening. Epipleura distinct to the apical curve, where the outer and inner margins fuse.

Aedeagus (Fig. 9) strongly asymmetrical; ostium large, at the left side; inner sac with elongate sclerites.

It seems that *Tricholochmaea* might be considered a separate genus. For a definite decision on the matter, a study of all the East Asian (or better still, all known) species assigned to it would be desirable.

Among the West-Palaeartic species studied, those of the genus *Xanthogaleruca* stand apart. This genus differs so

much from the others, in both external and genital characters, that it seems surprising that only BECHYNÉ (1961) has treated it as a separate genus, and that it has not even been recognized as a subgenus in some recent works. In fact, it appears to have its closest affinities with the African genus *Megaleruca* Lab. *Pyrhalta* and *Galerucella* are closer to each other, but in my opinion their differences are sufficient to keep them apart. Here, too, a renewed study of the East Asian species, including an investigation of genitalia, might result in some new, decisive information.

The larvae of these species have not been studied very much. The characters presented by OGLOBLIN & MEDVEDEV (1971) are intended more for rapid identification than for phylogenetic investigation. STEINHAUSEN's (1966) study on the labrum of Chrysomelid larvae may give some phylogenetic pointers; he mentioned that the labrum of *G. luteola* differed markedly from that of other species included in *Galerucella*. More detailed studies on the larvae, e.g. on chaetotaxy, will undoubtedly bring to light information of phylogenetic value.

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The larvae of two North American species of Coniopterygidae (Neuroptera)

Martin Meinander

Abstract

MEINANDER, MARTIN: The larvae of two North American species of Coniopterygidae (Neuroptera). — Notulae Entomol. 54:12—16. 1974.

The larvae of *Conwentzia barretti* (Banks, 1899) from California and *Semidalis vicina* (Hagen, 1861) from Florida, both belonging to the subfamily Coniopteryginae, are described and compared with the other larvae so far described from the same genera. A key is given to those North American genera of Coniopteryginae of which the larvae are known.

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When revising the Coniopterygidae (MEINANDER 1972) I was sent specimens of larvae of two North American species, *Semidalis vicina* by Dr. Muma (Lake Alfred, Fla.) and *Conwentzia barretti* by the University of California (Berkeley). As very few larvae of Coniopterygidae are adequately described, I think it useful to give a description of them. MUMA (1971) has already described the first-instar larva of *S. vicina* and EMERTON (1906) gave a drawing of the prepupa (fourth-instar larva), but the only North American species of which the third-instar larva is fairly accurately described is *Heteroconis picticornis* (Banks).

It seems possible to separate the larvae of the different species of Coniopterygidae mainly on colour characters. Larvae are known from three of the genera of the subfamily Coniopteryginae occurring in North America. Before a good key to the larvae can be constructed, many more species need to be examined, but I include below a short provisional key to the genera of Coniopteryginae based on all described species

of the genera from any part of the world.

Key to genera

1. Antennae two or more times as long as labial palpi. Jaws not projecting from beneath labrum (subfamily Coniopteryginae) 2
- Antennae about as long as labial palpi. Jaws projecting from beneath labrum (subfamily Aleuropteryginae)
2. Legs longer than width of thorax. Setae on median parts of clypeus-labrum sclerite more than 10 and irregularly placed ... *Conwentzia*
- Legs shorter than width of thorax. Setae of median part of clypeus-labrum sclerite 5 or less, regularly arranged 3
3. On clypeus-labrum medially two pairs of setae and anteriorly of them one median seta *Semidalis*
- On clypeus-labrum medially one pair of setae and anteriorly of it one median seta *Coniopteryx*

In the figures the following abbreviations are used for the anatomical parts:

Ant	— Antenna
Cd	— Cardo
Clp	— Clypeus
Lm	— Labrum
Lpl	— Labial palpus
Md	— Mandible
Mxsty	— Stylus of maxilla
Plg	— Palpiger
sep	— Epistomal suture
SsAnt	— Supra-antennal setae
St	— Stipes
SVx	— Vertex setae

Conwentzia barretti (Banks, 1899)

Fig. 1.

Length of apparently full-grown third-instar larva 3.0 mm, width of thorax 1.0 mm. Body swollen anteriorly, meso- and metathorax of about equal width, abdomen tapering regularly towards posterior end. Head partly retracted into prothorax, pale in colour; antennae and palpi translucent. Prothorax laterally with well-limited brown

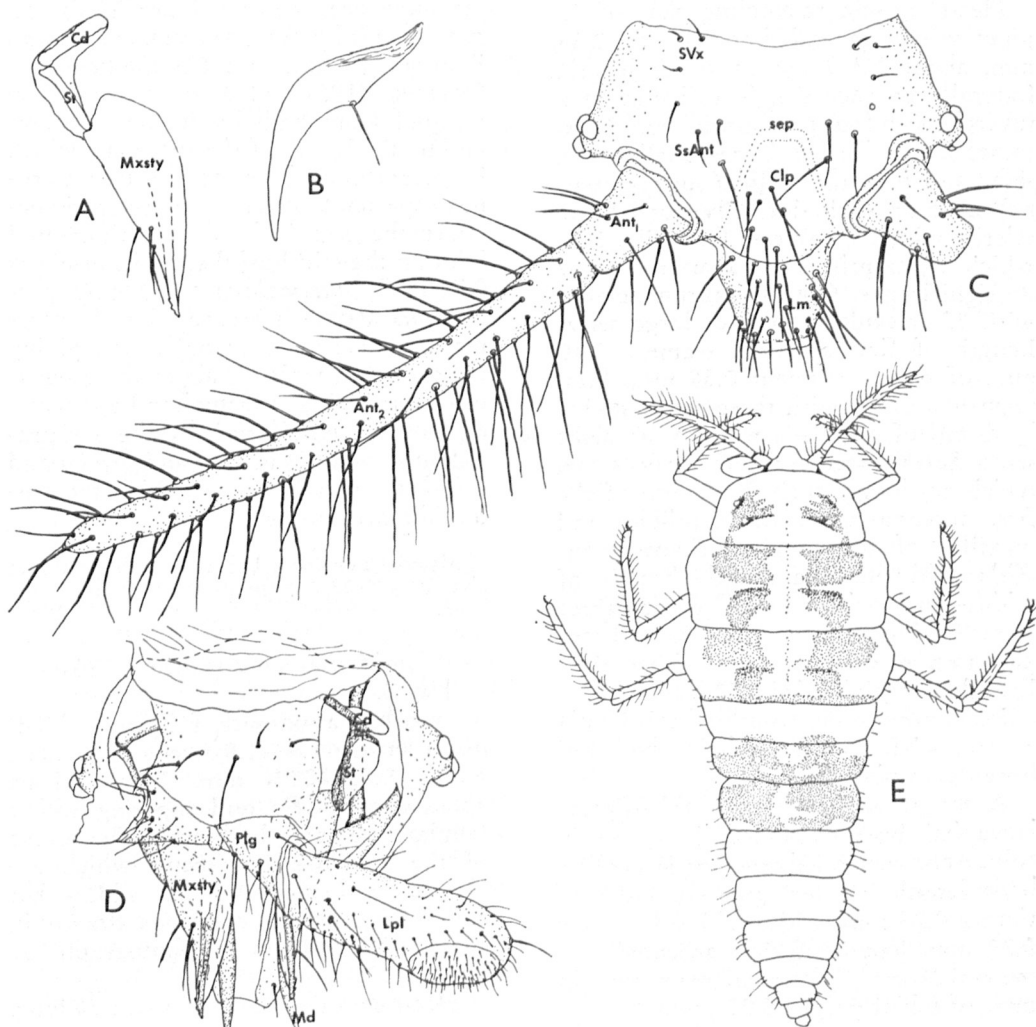


FIG. 1. Third-instar larva of *Conwentzia barretti*. A. maxilla, B. mandible, C. head, dorsal view (mandibles, maxillae and labium not drawn), D. head, ventral view (antennae not drawn), E. whole larva, dorsal view (setae of head not drawn).

markings; meso- and metathorax with medio-lateral markings divided transversely into two parts, the anterior extending further laterad than the posterior. Metathorax posteriorly narrowly brown for the whole width. First abdominal segment almost white except for two narrow transverse markings posteriorly. Second and third abdominal segments almost wholly brown, with only small irregular white areas. Rest of abdomen whitish. Legs translucent.

Head capsule resembling that of *C. pineticola* in general shape; width, 0.34 mm, about $1.2 \times$ as broad as length. Laterally on each side is a distinct eye-tubercle with four ommatidia each. Epistomal suture distinct. Three small vertex setae and four rather long supra-antennal setae on each side. Clypeus-labrum sclerite with a transverse fold (Fig. 1C), which apparently is not a suture and of no significance. Clypeus-labrum sclerite with 30 irregularly placed, large setae. Length of first antennal segment 0.10 mm, of second segment 0.58 mm. First segment basally with three setae; slightly distad of middle a whorl with eight setae. Second segment with many setae, which are longer than the length of the first antennal segment. Mandibles and maxillae of the common shape, mandibles with one seta slightly basally of middle and styli of maxillae with three setae. Labium with one long central seta and two shorter setae on either side. Length of labial palpi 0.22 mm.

Legs rather long, length of third tibia + tarsus 0.50 mm. Body hairs short and irregularly placed.

A second specimen of a third-instar larva has been examined. It agrees in colour and general shape, but is smaller, body length 2.2 mm, greatest width of thorax 0.74 mm, width of head capsule 0.30 mm, length of first antennal segment 0.08 mm, of second segment 0.46 mm, of labial palpus 0.20 mm.

The prepura agrees rather well in dimensions with the third-instar larva described, body length about 2.8 mm, length of first antennal segment 0.12 mm, of second segment 0.54 mm, of labial palpus 0.50 mm. In shape it has an arched back with both head and terminal part of abdomen directed ventrad. The labial palpi are distinctly two-segmented, whereas in the third-instar larva they are one-segmented.

The larva of two species of *Conwentzia* have been described previously, *C. psociformis* by WITHEYCOMBE (1923) and ROUSSET (1966), and *C. pineticola* by COLLYER (1951). *C. barretti* can be separated from both by its body colour and by the length of the antennae, which is intermediate between the two European species. COLLYER gives the ratio between the length of the second antennal joint and the width of the head capsule as 0.74 in *C. pineticola* and 2.29 in *C. psociformis*. ROUSSET records slightly shorter antennae in *C. psociformis*, giving the ratio 1.7, which is about the same as in *C. barretti*. The latter can be separated from *C. psociformis* by the 4 supra-antennal setae (2 in *C. psociformis*) and the distinct tubercles on which the ommatidia are situated.

Material examined: U.S.A., Cal., Berkeley, on *Ilex*, 1964-06-22, 2 third-instar larvae and 1 prepupa.

Semidalis vicina (Hagen, 1861)

Fig. 2.

Length of apparently fullgrown third-instar larvae 1.6–1.8 mm and greatest width 0.65–0.75 mm. Body widest about the middle and tapering rather regularly towards both ends. The colour of the available specimens, which are cleared and mounted on slides, has faded. The colour markings drawn in Fig. 2A are from a photograph by MUMA (1967).

Head capsule about as broad as long,

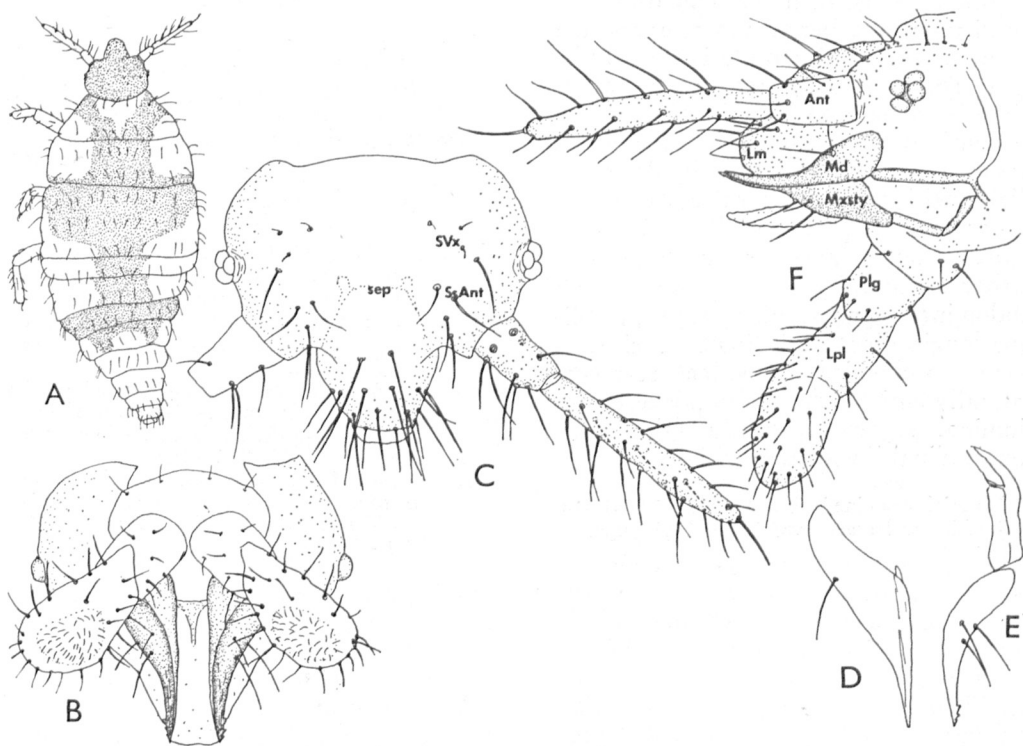


FIG. 2. *Semidalis vicina*. A third-instar larva, dorsal view (setae of head not drawn), B. Head of third-instar larva, ventral view (antennae not drawn), C. ditto, dorsal view (labial palpi not drawn), D. mandible, E. maxilla, F. head of prepupa, lateral view.

width 0.30—0.31 mm. Eyes not on protuberant tubercles, ommatidia 4. Epistomal suture visible. Three small vertex setae and five rather long supra-antennal setae present on each side. Clypeus-labrum sclerite with four regularly placed setae medially and one median seta anteriorly to them. The sclerite is bordered by 12 setae. Length of first antennal segment 0.08 mm, of second segment 0.23—0.24 mm. First antennal segment basally with three setae and distally with five setae. Second segment with many setae; these are shorter than the length of the first antennal segment. Mandibles and maxillae of the common

shape, mandibles with one and styli of maxillae with three setae. Labium with four short hairs along posterior margin. Length of labial palpi 0.16—0.20 mm.

Legs rather short, length of third tibia + tarsus 0.28 mm. Body hairs arranged in regular transverse rows, more than one row on each thoracic tergite and one on each abdominal tergite.

One prepupa is present in the material and, as in *Conwentzia barretti*, it is characterized by a two-segmented labial palpus (Fig. 2F).

The larva of only one species of *Semidalis*, *S. aleyrodiformis* Steph., has been described so far (WITHYCOMBE 1923,

ROUSSET 1966). In it the ommatidia are on distinct protuberant tubercles and the shape of the head capsule is thus different. The two species seem to be rather alike in chaetotaxy, but in colour they are entirely different. *S. aleyrodiformis* has prothorax which is broadly dark medially with whitish lateral borders, meso- and metathorax medially white, prothorax laterally anteriorly dark and metathorax laterally entirely dark, first abdominal segment white with an oblique longitudinal dark line on each side, second and third abdominal segments laterally entirely dark, and posterior abdominal segments with a faint dark longitudinal line on each side.

Material examined: U.S.A., Fla., 1963-11-14, 3 third-instar larvae; 1963-11-19, 1 prepupa.

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För Finlands fauna nya *Blacus*-arter (Hymenoptera, Braconidae)

Dr. E. Hasselbarth i München som för närvarande är sysselsatt med en bearbetning av palearktiska *Blacini*, har i en determinationssändning funnit följande av mig insamlade för vår fauna nya arter.

Blacus striatus Stelfox, N: Helsingfors.

B. nitidus Hasselbarth, Al: Jomala.

B. macropterus Hasselbarth, N: Helsingfors.

B. pectinatus Hasselbarth, N: Helsingfors: Kottby.

B. longipennis Grav. Al: Eckerö.

B. gracilis Hasselbarth, Kl: Parikkala.

B. stelfoxi Hasselbarth, N: Helsingfors.

B. hastatus Hal., Al: Eckerö; Ik: Sakkola.

B. paganus Hal., N: Helsingfors; Sa: Joutseno; Kl: Parikkala.

B. ?humilis Grav. Ta: Hauho.

Wolter Hellén

Taxonomische Bemerkungen über einige Blattwespen II (Hymenoptera, Symphyta)

Eitel Lindqvist

Abstract

LINDQVIST, EITEL: Taxonomische Bemerkungen über einige Blattwespen II (Hymenoptera, Symphyta). — Notulae Entomol. 54:17—22, 1974.

Notes on the males of *Amauronematus rufus* Konow, *A. schluteri* Enslin and *Pteronidea abscondita* Lindqvist. *Amauronematus acutiserra* sp.n., *Arge fuscinervis* sp. n. and *Pristiphora angulata* sp. n. are described. The first find of a male of the nominal form of *Dolerus sanguinicollis* Klug with redspotted mesonotum is recorded. Taxonomic notes on *Pteronidea capreae nigronostata* Enslin.

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Arge fuscinervis sp. n.

Das Aussehen bzw. das Erkennen dieser neuen Art erhellt am besten durch den Vergleich mit der weit verbreiteten und häufigen *Arge ustulata* L., mit der sie bisher verwechselt worden ist. Abweichend von dieser Art ist *fuscinervis* 1—2 mm kleiner und das Flügelgeäder ausser der Costa dunkel. Die in normalen Fällen gelblichen Flügel können bei hochnordischen Exemplaren entfärbt sein. Die Fühler des ♀ sind oft mehr oder weniger und in extremen Fällen ganz oder fast ganz blassbraun. Die Säge Abb. 1 und die Penisvalve Abb. 7.

Sowohl der Holotypus, das ♀, am 21. VI. 1963 in N: Helsingfors-Lövö, als der Allotypus, das ♂, am 16. VI. 1962 in N: Helsingfors von mir erbeutet, befinden sich in meiner Sammlung.

A. fuscinervis dürfte keine seltene Blattwespe sein, da sie mir durch zahlreiche Funde vom südlichsten Finnland bis zum nördlichsten Lappland bekannt ist. Dass die Art u.a. in Mitteleuropa auch vorkommen dürfte, geht aus folgenden Äusserungen hervor. KONOW (1907:59) erwähnt, dass die Fühler bei

ustulata »manchmal gegen das Ende mehr oder weniger bleich, selten ganz bräunlichgelb« sind, während ENSLIN (1917:600) in seiner *ustulata*-Beschreibung äussert: »Es kommen selten Exemplare vor, bei denen das dritte Fühlerglied gelb ist«. Diese Äusserungen können kaum anders aufgefasst werden, als dass es sich um *fuscinervis* handeln muss. Bei der echten *ustulata* habe ich nämlich keine hellen Fühler gesehen.

Schon vor Jahren bemerkte ich, dass mein *ustulata*-Material nicht homogen war. Darin kamen Exemplare vor, die ein in obenerwähnter Weise abweichendes Aussehen hatten. Um BENSONS Ansicht betreffs der fremden Exemplare zu hören, sandte ich ihm ein ♀ zur Ansicht, wobei er mir mitteilte, er glaube, dass es sich um *Arge clavicornis expansa* Kl. handelte. Mit *clavicornis* hatte BENSON (1962:387) *Arge fuscipes* Fall. synonymisiert, und da er (1951:34) früher *expansa* für eine Form von *fuscipes* gehalten hatte, folgte daraus, dass er (1962:387) *expansa* als eine Form von *clavicornis* erklären musste.

Mit BENSONS Ansicht war ich nicht

einverstanden. *A. clavicornis* ist eine nordamerikanische Art, deren Färbung sehr variabel ist. Der Hinterleib kann nämlich von ganz oder teilweise gelb bis metallisch grün oder blauschwarz gefärbt sein. Eine derartig variable *Arge*-Art kommt in Finnland nicht vor, und unter allen Umständen kann meine neue Blattwespe mit *expansa*, die ich kürzlich (1973a:33) geklärt habe, auch nicht als identisch angesehen werden.

Als ich die Säge (Abb. 1) und die Penisvalve (Abb. 7) von *fuscineris* untersucht hatte, stellte sich heraus, dass diese Körperteile bei *ustulata* (Abb. 2 und 8) anders aussahen. Somit hatte ich nur den Schluss zu ziehen, dass es sich um verschiedene Arten handeln musste. Der Unterschied zwischen den Sägen ist nicht besonders gross, aber hierbei ist zu berücksichtigen, dass die Sägen der *Arge*-Arten überhaupt ein sehr gleichartiges Aussehen haben und dies sogar in solchen Fällen, wo Arten äusserlich voneinander erheblich abweichen können.

Dolerus sanguinicollis Klug

Diese Blattwespe wurde i.J. 1814 nach einem ♀ mit rotgeflecktem Mesonotum beschrieben, und 1835 beschrieb STEPHENS ein nahestehendes ganz schwarzes ♀ unter dem Artnamen *fumosus*. Später hat es sich herausgestellt, dass es sich hierbei um identische Arten handelt, und dass die ganz schwarze Form viel häufiger als die rotgefleckte ist. In Finnland z.B. ist meines Wissens kein rotgeflecktes ♀ angetroffen worden, obgleich die ganz schwarze Form *fumosus* keine Seltenheit ist.

Was das ♂ betrifft, das auch nicht selten ist, ist hervorzuheben, dass bisher nur ganz schwarze Exemplare in Europa erbeutet worden sind, weshalb z.B. BENSON (1952:70) und MUCHE (1969:90) ausdrücklich erwähnen, dass das ♂ stets völlig schwarz sei. Bei dieser Gelegenheit kann ich aber mitteilen, dass das

erste rotgefleckte *sanguinicollis*-♂ nunmehr angetroffen worden ist. Am 13.VI. 1972 gelang es E. KARVONEN in Sb: Leppävirta im nördlichen Teil Südfinnlands ein ♂ zu erbeuten, dessen beide Mesonotum-Seitenloben rot sind.

Hierbei stellt man sich die Frage, von wo das Gen der roten Farbe in diesem Falle herrührt, da kein rotgeflecktes ♂ in Finnland angetroffen worden ist. Den ersten Fund eines rotgefleckten ♂ hätte man aus Mitteleuropa erwartet, wo rotgefleckte ♀♀ angetroffen worden sind, aber nicht aus Finnland.

Amauronematus schlueteri Enslin

Wie ich (1973b:42) hervorgehoben habe, ist das ♂ von *Amauronematus schlueteri* Ensl. äusserlich nicht leicht zu identifizieren. Als ich (1965:20) mitteilte, dass das von mir (1961:10) beschriebene ♂ von *Amauronematus saarineni* falsch bestimmt war, handelte es sich ausgesprochen um ein gezogenes kleines Exemplar von *schlueteri*, wie sich nunmehr herausgestellt hat. Charakteristisch für das ♂ von *schlueteri* ist die kräftige Bedornung der Penisvalve (Abb. 9), durch welches Merkmal zusammen mit dem übrigen Aussehen der Penisvalve die betreffende Art unschwer zu identifizieren ist. Als ich das falsch bestimmte *schlueteri*-♂ als das von *saarineni* auffasste, war seine Penisvalve mir noch nicht bekannt.

Amauronematus rufus Konow

Aus meinem (1965:18) Aufsatz über diese Art geht hervor, dass ich der Ansicht war, dass das ♂ von *rufus* nicht bekannt sei, weshalb ich es beschrieb. Nunmehr habe ich aber erfahren, dass KONOW (1897:179) es um ein Jahr später als das ♀ beschrieben hat. Diese Beschreibung bezieht sich aber auf ein helleres ♂ als meine ♂♂, unter denen ich ein Stück habe, das ich durch Zucht von

ex ovo-Larven erhalten habe, weshalb es unter allen Umständen ein wahres *rufus*-♂ ist.

Amauronematus acutiserra sp. n.

♀. Schwarz. Umgebung der Sägescheide und grösstenteils Beine blassbraun. Spitzenglieder der Tarsen verdunkelt, Hinterseite der Vorder- und Mittelschenkel schwarz gestriemt und Hinterschenkel fast ganz schwarz. Trochanteren der Hinterbeine weisslich. Tegulae und Rand der Pronotumecken schmutzig weisslich. Costa und Stigma blassbraun, Hinterrand des Stigmas verdunkelt.

Kopf fein und dicht punktiert, matt, hinter den Augen verschmälert. Scheitel kurz, schlecht entwickelt, mindestens dreimal so breit wie lang. Stirnfeld undeutlich. Clypeus wenig ausgerandet. Fühler so lang wie Kopf und Thorax, drittes Glied ein wenig kürzer als das vierte und etwas kürzer als der Längsdurchmesser eines Netzauges. Thorax dicht punktiert, matt. Mesonotum-Mittellobe ziemlich flach und mit schwacher Längsfurche. Schildchen leicht gewölbt, etwa doppelt so lang wie sein Anhang, beide stark punktiert und voneinander gut abgegrenzt. Hinterleibsrücken kaum skulptiert, auffällig glänzend. Innerer Hintersporn fast etwas länger als Tibien spitze breit. Klauen tief gespalten. Sägescheide parallelseitig, Ende abgestutzt, so lang wie die Cerci und etwas mehr als doppelt so dick wie sie. Säge Abb. 3. Länge 6 mm.

Der Holotypus, das ♀, am 19. VI. 1967 in Tri: Helliskogen im nördlichsten Norwegen von O. Ranin erbeutet, befindet sich in meiner Sammlung.

A. acutiserra steht *A. humeralis* Lep. sehr nahe, unterscheidet sich aber vor allem dadurch, dass die Mundteile und Orbiten ganz schwarz und die ersten Sägezähne niedriger und gerader (Abb. 3 und 4) sind. Während *acutiserra* als eine hochnordische Blattwespe anzuse-

hen ist, ist *humeralis* eine südlichere Art, die in Lappland nicht vorkommt.

Amauronematus cornutus Lindqvist
und *A. nitidipleuris* Malaise

In meinem (1973a:36—38) Aufsatz über die oben erwähnten Arten ist zu meinem Bedauern in der Figurerklärung auf S. 36 folgender Irrtum eingetroffen. Die Abb. 6 vertritt nicht *cornutus*, sondern *nitidipleuris*, und die Abb. 7 nicht *nitidipleuris*, sondern *cornutus*, wie aus dem Texte auf S. 38 hervorgeht.

Pteronidea abscondita Lindqvist

Das bisher unbekannte ♂ dieser von mir (1948:77) beschriebenen Art ist mir nunmehr bekannt geworden, und ich beschreibe es unten wie folgt.

Wie bei mehreren, tot grösstenteils bleichen, lebend aber grünen *Pteronidea*-Arten ist das ♂ beträchtlich schwärzer als das ♀. So auch in diesem Falle. Schwarz sind somit ein grosser Stirnfleck, der sich fast bis zu den inneren Augenrändern erstreckt, der Scheitel, die Hinterseite des Kopfes, das Mesonotum, der Hinterleibsrücken, die Propleuren, die Epimeren, der oberste Rand der Mesopleuren und ein grösserer oder kleinerer Doppelfleck des Mesosternums. Weiter sind die Oberseite der Fühler, die Hintertibien besonders gegen die Spitze zu sowie die Hintertarsen schwarz. Weiss sind Untergesicht, Mundteile, innere und äussere Orbiten, Pronotumränder, Tegulae, Hüftenspitzen und Trochanteren. Gelblich bleich sind Mesopleuren grösstenteils, Bauch, Vorder- und Mittelbeine sowie Hinterschenkel. Unterseite der Fühler bräunlich. Flügel klar, Geäder dunkel, Costa und Stigma gelblich blassbraun.

Kopf schwach, Schläfen deutlicher punktiert. Scheitel kaum doppelt so breit wie lang. Stirnfeld nicht gut begrenzt. Clypeus flach ausgerandet. Fühler so lang wie Hinterleib und halber Thorax,

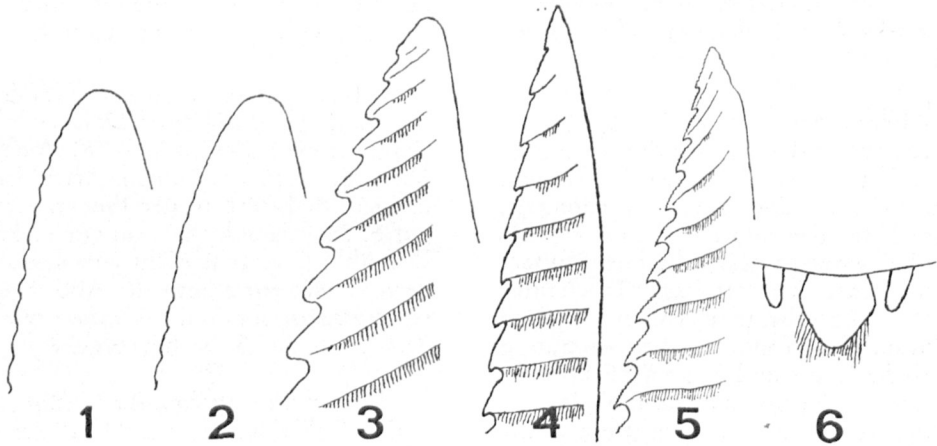


Abb. 1—5 Sägespitzen folender Blattwespen: 1 *Arge fuscinervis* n. sp., 2 *A. ustulata* L., 3 *Amauronematus acutiserra* n. sp., 4 *A. humeralis* Lep., 5 *Pristiphora angulata* n. sp. Abb. 6 Sägescheide von *Pristiphora angulata* n. sp.

leicht komprimiert, drittes Glied ein wenig kürzer als das vierte. Mesonotum ganz fein punktiert, ziemlich stark glänzend, Furche der Mittellobe tief. Mesopleuren unpunktiert, stark glänzend. Fortsatz des letzten Tergits klein, fast quadratisch. Genitalplatte gerundet. Penisvalve Abb. 10. Länge 5,5 mm.

Der Allotypus, das ♂, am 28. VI. 1967 in Li: Inari von V. J. KARVONEN erbeutet, befindet sich in meiner Sammlung. — Es mag erwähnt werden, dass KARVONEN ebenda und an demselben Tage auch ein ♀ dieser seltenen Art erbeutete.

Die Penisvalve verdient mit einigen Worten besprochen zu werden. Durch ihre Form und besonders durch die reichliche Bedornung erinnert sie an die Penisvalven der Arten der *Pteronidea flavescens* Steph.-Gruppe. Die sehr langen Fühler und die nicht gelblichbraune sondern bleiche Färbung zeigen, dass es sich nicht um eine Art dieser Gruppe handeln kann. Das ♂ muss eine Art der im Leben grünen, tot aber bleichen Blattwespen vertreten.

Bei dieser Gelegenheit mag noch hervorgehoben werden, dass das ♀ von *abscondita* variabler ist, als was mir bei seiner Beschreibung bekannt war. Bei zwei vorliegenden Exemplaren ist nämlich der Hinterleibsrücken ganz ungeschwärzt, und bei einem kleinen ♀ wieder ist der Hinterkopf deutlich verengert.

Pteronidea capreae nigronotata Enslin

Die von ENSLIN (1916:453) als eine Varietät von *Pteronidea miliaris* Panzer (= *capreae* Linné) beschriebene *nigronotata* unterscheidet sich von der Nominatform u.a. dadurch, dass die Hinterleibstrieme sehr breit, das Mesosternum ganz und der Scheitel mehr oder weniger schwarz sein sollen. Mir sind vier derartige Exemplare von *capreae* bekannt, die V. J. KARVONEN im nördlichsten Lappland erbeutet hat, und die ich als Vertreter von *nigronotata* auffasse. Um ihre Identität mit ENSLINS Stücken feststellen zu können, schrieb ich an die Zoologische Sammlung des Bayerischen

Staates, München, um einige von ihnen zur Ansicht zu erhalten. Das ganze Material von *capreae*, 31 Stück, wurde mir gütigst zugesandt. Als ich die Tiere untersuchte, stellte sich heraus, dass die meisten Exemplare die Nominatform und eine geringere Zahl die var. *pura* Först. vertraten, während *nigronotata* in der Sendung ganz fehlte. Als ich die Zoologische Sammlung darauf aufmerksam machte, erhielt ich den Bescheid, dass sie kein Stück von ihr finden konnten. Somit scheiterte meine Hoffnung, *nigronotata* näher kennenzulernen.

P. capreae ist eine Art, die leicht zu identifizieren ist. Die ausgedehnte hellbraune Färbung ist schon auffällig, und die Sägescheide mit ihrer Behaarung und die langen und ziemlich weit voneinander gelegenen Cerci geben dem Hinterleibsende ein charakteristisches Aussehen, wodurch die Art kaum falsch bestimmt werden kann. Ich muss daher damit rechnen, dass die hochnordischen Exemplare mit *nigronotata* identisch sind. Interessant wäre es hierbei zu wissen, wo die Tiere ENSLINS erbeutet worden sind. Hochnordische Exemplare dürften sie kaum sein. Dagegen ist es

nicht ausgeschlossen, dass sie von den Hochgebirgen Mitteleuropas oder eher von den Alpen herkommen, aber kaum vom mitteleuropäischen Tiefland. Darauf deutet nämlich das Vorkommen der finnischen Exemplare im nördlichsten Lappland hin. In diesem Zusammenhange mag erwähnt werden, dass die Nominatform von *capreae* nur aus Südfinnland bekannt ist, weshalb *nigronotata* als eine isolierte, hochnordische Form von *capreae* zu deuten ist. Es mag jedoch hervorgehoben werden, dass es nicht ausgeschlossen ist, dass *nigronotata* eine eigene Art sein kann. Dies kann aber erst dann abgemacht werden, wenn das ♂ und die Larve bekannt werden.

Aus den mir vorliegenden Exemplaren geht hervor, dass ihre Färbung variabel ist. Somit sind mehr oder weniger schwarz ein grösserer oder kleinerer Stirn-Scheitelfleck, Hinterkopf grossenteils oder fast gar nicht, Propleuren mehr oder weniger, Mesosternum stärker, schwächer oder gar nicht und Hinterleibsstrieme breiter oder schmaler.

Pristiphora angulata sp. n.

♀. Schwarz. Oberlippe, Pronotumecken, Tegulae, Beine, letzter Tergit und Hypopygium mehr oder weniger blassbraun oder gelblich braun. Flügel leicht gebräunt, Geäder dunkelbraun, Stigma verdunkelt, sein Vorderrand nebst Costa blassbraun.

Kopf dicht punktiert, fast matt. Scheitel schlecht abgegrenzt. Stirnfeld undeutlich, Stirnwulst in zwei schwache Höcker geteilt. Clypeus gerade. Fühler kurz, höchstens doppelt so lang wie die Kopfbreite, ziemlich dick, gegen die Spitze zu verdünnt, drittes Glied unbedeutend länger als das vierte und ein wenig länger als Querdurchmesser eines Netzauges. Mesonotum fast unpunktirt, glänzend. Mesopleuren unpunktirt und ganz glatt. Tergite glänzend. Innerer Hintersporn etwa so lang wie Tibien-

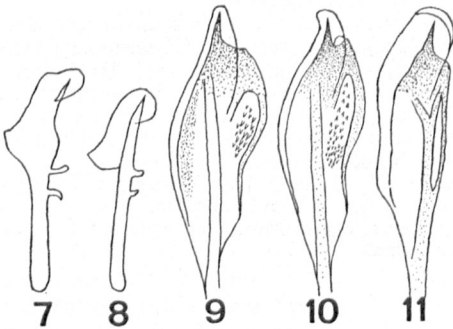


Abb. 7—11 Penisvalven folgender Blattwespen: 7 *Arge fuscinervis* n. sp., 8 *A. ustulata* L., 9 *Amauronematus schlueteri* Ensl., 10 *Pteronidea abscondita* Lqv., 11 *Pristiphora angulata* n. sp.

ende breit. Klauen mit kleinem Zahn. Sägescheide so lang wie breit, an der schmälere Basis etwas verbreitert und dann zugespitzt, etwas länger als die kurzen Cerci und etwa viermal so dick wie sie, mit lichter, rückwärts gerichteter Behaarung (Abb. 6). Sägezählung Abb. 3. Länge 6—7 mm.

♂. Färbung, plastische und skulpturale Merkmale hauptsächlich wie beim ♀. Genitalplatte gelblich braun. Penisvalve Abb. 11. Länge 5,5—6 mm.

Der Holotypus, das ♀, und der Allotypus, das ♂, am 6. VI. 1971 in *Ta: Luopioinen* in Südfinnland von MATTI AHOLA erbeutet, befinden sich in meiner Sammlung.

Einige andere Imagines hat AHOLA noch erbeutet, und ausserdem hat er die Art e larva von *Spiraea chamaedryfolia* gezogen. Die Larven, die gesellig leben, sind grün mit zwei weissen Längsstreifen auf dem Rücken. Als jung fressen

die Larven Kronblätter und Fruchtblätter, als älter grüne Blätter.

Die Färbung von *angulata* ist nicht konstant. Die Farbe der Oberlippe variiert von ganz schwarz bis ganz ungeschwärzt, und die Schenkel können mehr oder weniger schwarz gestriemt oder ganz ungeschwärzt sein.

Das ♀ von *angulata* ist sehr leicht zu identifizieren. Die allermeisten *Pristiphora*-Arten haben eine stumpfe Sägescheide, und von den wenigen übrigen Arten hat keine eine solche wie *angulata* (Abb. 6).

Das ♂ von *angulata* ist dagegen schwer zu identifizieren, weil es mehrere *Pristiphora*-Arten gibt, die äusserlich oder bezüglich der Penisvalve *angulata* mehr oder weniger gleichen. Eine zuverlässige Bestimmung setzt daher eine sorgfältige Untersuchung verschiedener Merkmale voraus.

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Dicyphus (Brachyceroea) muchei sp. n., eine neue Miriden-Art aus Südrussland (Heteroptera, Miridae)

Eduard Wagner

Abstract

WAGNER, EDUARD: *Dicyphus* (Brachyceroea) *muchei* sp. n., eine neue Miriden-Art aus Südrussland (Heteroptera, Miridae). (*Dicyphus*, Brachyceroea) *muchei* sp. n., a new species of Miridae from southern Russia (Heteroptera, Miridae). — Notulae Entomol. 54:23—24. 1974.

Description of *Dicyphus muchei* from Kazakhstan. The species is most closely related to *D. montandoni* Reuter.

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Länglich, das ♂ 3,8 ×, das ♀ 4,4 × so lang wie die Pronotumbreite. Hell gelbbraun mit schwarzer Zeichnung. Oberseite dicht mit schrägstehenden, kurzen, schwarzen Haaren bedeckt. Behaarung der Schienen mindestens so lang, wie die Schienen dick sind. ♂ und ♀ makropter.

Kopf (Fig. 1b) kurz, hell mit schwarzer Zeichnung. Tylus schwarz. Stirn und Scheitel mit schwarzem Mittelfleck, der an die Zeichnung von *Dicyphus* s.str. erinnert (Fig. 1a) und oft in 3 Flecke geteilt ist (Fig. 1b). Hinterrand des Scheitels schwarz. Die schwarze Färbung reicht an den Seiten nach vorn bis ans Auge. Scheitel beim ♂ 1,4 ×, beim ♀ 1,6 × so breit wie das Auge. Fühler (Fig. 1c) kurz und kräftig, schwarz. 1. Glied an beiden Enden hell; 2. Glied so lang wie die Kopfbreite, gegen die Spitze verdickt, an der Basis schmal hell, oft ausserdem mit hellem Ring, der der Basis näher liegt als der Spitze; 3. Glied oft ebenfalls an der Basis hell, 0,75 × so lang wie das 2. und 1,67 × so lang wie das Endglied.

Pronotum (Fig. 1b) trapezförmig, die Quersfurche liegt etwas vor der Mitte.

Schwielen klein, weder aneinanderstossend noch den Seitenrand berühend, schwarz gefärbt. Basis des Scutellum mit 2 hellen Flecken, die oft orange gefärbt sind. Hinterer Abschnitt einfarbig schwarz oder mit 2 keilförmigen hellen Flecken. Halbdecken hell, Corium am Hinterrande jederseits mit 2 schwarzen Flecken. Spitze des Cuneus schwarz. Membran durchscheinend, Adern braun.

Unterseite schwarz. Das Rostrum reicht bis zu den Mittelhöften. Beine hellgelb. Schenkel mit dunklen Punkten, die 2 Längsreihen bilden. Schienen ohne Punkte, aber mit dunklen Haaren. 3. Tarsenglied dunkler. (Klauen (Fig. 1i) schlank, leicht S-förmig gekrümmt. Das Haftläppchen ist länger als seine Entfernung von der Klauenspitze.

Genitalsegment des ♂ (Fig. 1d) fast kugelig. Linkes Paramer (Fig. 1f) mit einem Büschel von 15—20 langen, schwarzen Haaren, die über die Hypophysis hinausragen. Arm der Hypophysis S-förmig. Hypophysis kurz und kräftig, ohne Kamm, proximal gerundet vorstehend. Rechtes Paramer (Fig. 1e) klein, Hypophysis gekrümmt. Penis (Fig. 1g) schlank und spitz. In der

Vesika finden sich 2 schlanke, gekrümmte Spicula.

Länge: ♂ = 3,5—4,0 mm, ♀ = 3,8—4,2 mm.

Die Art muss wegen der kleinen Schwielen des Pronotum und der kurzen dicken Fühler in die Untergattung *Brachyceroea* Fieb. gestellt werden. Innerhalb dieser Untergattung gehört sie wegen des schwarzen Scheitelhinterlandes in die *D. montandoni*-Gruppe. Von der einzigen Art dieser Gruppe, *D. montandoni* Reut. unterscheidet sie sich durch grössere, schlankere Gestalt, den hellen Ring in der Mitte des 2. Fühlergliedes und den Bau der Genitalien des ♂. Auffällig ist daran der stark entwickelte Haarbush auf dem Sinneshöcker des linken Paramers.

Material: 3 ♂♂ und 4 ♀♀ aus dem Süden der UdSSR: Kasachstan, Medeo, im Ala-Tau in 2 000 m Höhe, 30. 5.—16. 6. 72, leg. H. Muche. Holotypus in meiner Sammlung, Paratypoide ebenda und in der Sammlung H. Eckerlein, Coburg.

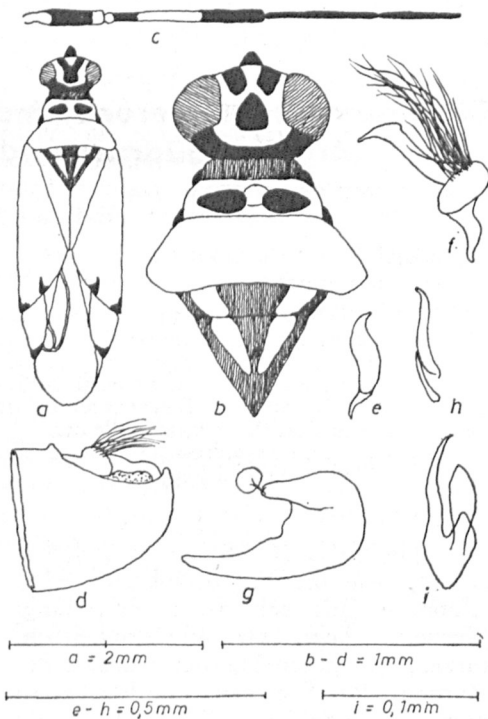


Fig. 1. *Dicyphus (Brachyceroea) muchei* sp. n. a = Gestalt des ♂, b = Vorderteil des ♂, c = Fühler, d = Genitalsegment des ♂ von links, e = rechtes Paramer von oben, f = linkes Paramer von oben, g = Penis von rechts, h = Spikula der Vesika von rechts, i = Klaue des Hinterfusses von aussen.

Notes on the *Helophorus* species (Coleoptera, Hydrophilidae) of Fennoscandia and northern Russia

Robert Angus

Abstract

ANGUS, ROBERT: Notes on the *Helophorus* species (Coleoptera, Hydrophilidae) of Fennoscandia and northern Russia. — Notulae Entomol. 54:25—32, 1974.

Information is given on the distribution of the Fennoscandian and some other *Helophorus* species. From the Karelian Isthmus (Ik) are recorded *H. discrepans* Rey (new for Fennoscandia), *H. grandis* Ill. and *H. griseus* Hbst. *H. pallidus* Gebl. is recorded from Estonia. The Fennoscandian records of *H. longitarsis* Woll. (*erichsoni*) Bach) are due to misidentification. The genitalia are figured for some species, and their systematics are discussed. *H. brevipalpis* is considered a species distinct from *H. guttulus* Motsch.

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This paper gives distributional and some taxonomic notes on *Helophorus* species occurring in or near the Faunal Area of Fennoscandia, as set out in the Catalogus Coleopterum Fennoscandiae et Daniae. One of the main reasons for writing it has been to give details of distributions in the Leningrad region. This area is of particular interest, partly because it abutts the relatively well studied fennoscandian region and partly because it embraces the transition between the Northern Coniferous and Temperate Deciduous forest belts.

In compiling distributions for this paper, Fennoscandian distributions are largely taken from the Catalogus Coleopterum Fennoscandiae et Daniae, hereafter referred to simply as the Catalogus, while Russian distributions are taken from the collections of the Zoological Institute, Leningrad (ZIN), the private collections of Messrs I. Miellender, G. V. Milender and V. Soo (Tallinn), and K. Sedykh (Komi ASSR) as well as from my own collecting round Leningrad

in May 1970, and in Siberia later that year.

H. nubilus F.

The Catalogus shows this species to be widely distributed in southern Fennoscandia, with an additional record from Karelia Pomorica. The ZIN collections contain material from Peterhof, west of Leningrad, and from points further south and west. I have also seen it from near Moscow. Thus Fennoscandia represents the northernmost limit of the range of this species.

H. tuberculatus Gyll.

This species, widely distributed in Fennoscandia, especially Finland, appears to be mainly characteristic of the Coniferous Forest belt. The Estonian collections contain several specimens, while the ZIN collection has material from Leningrad, Bologoe, Smolensk, N. W. Siberia (By-Posl and the tundra near Salekhard), and Yakutia. I took one specimen near Olëkminsk in Southern Yakutia in July 1970.

H. sibiricus Motsch. (*fennicus* auctt. nec Paykull).

Although this is a mainly northern and mountain species in Fennoscandia the Catalogus records it from Karelia Onegensis. I have, however, not seen any specimens from the adjacent parts of Russia. The nearest records in the ZIN collection are from Ust Tsylna on the Pechora, the Karskaya Tundra and Salekhard.

H. aquaticus (L.) (*aequalis* Thoms.).

This widespread European species is of particular interest as it comprises two subspecies, differing only in the male genitalia (ANGUS 1973). In the western and lowland form the outer margins of the parameres are straight (Fig. 1), while in eastern and mountain populations these outer margins are distinctly curved (Figs. 2 and 3). The two races overlap and appear to intergrade where this happens. Their approximate distributions are shown by ANGUS (1973:314). In Finland both forms occur, as well as intermediates, while in Norway and southern Sweden the parameres are straight. I do not know the situation in northern Sweden. Round Leningrad and the adjacent area of Russia (north and east to Ukhta (Komi ASSR) and Perm) the specimens all have parameres with curved outer margins. I do not know how far into Russia the straight-paramered race extends, but a specimen from the island of Lavansaari in the Gulf of Finland has straight parameres. These races appear to be of considerable antiquity, and have also changed their geographical distributions. Thus British fossils from the middle of the Last Glaciation (Weichselian) (aged about 39 000 years) have strongly curved parameres, while modern British material all has straight parameres, as does a fossil from the Last Interglacial (Eemian) (aged about 100,000 years).

It is very interesting to see that two contiguous races which interbreed where they meet, and are thus at most sub-specifically distinct from one another, can not only persist for this length of time, but can also undergo large changes of distribution without either speciating or merging into a common form.

H. strandi Angus (*bergrothi* sensu STRAND (1962), not *bergrothi* J. Sahlb.).

This species is apparently confined to mountain and northern areas of Fennoscandia. The only Russian material I have seen is from Polyarniy near Murmansk (ZIN coll.). It should be noted that the stem of the Y-groove on the head is quite often not expanded anteriorly in *H. aquaticus* as well as *strand*i, and that *strand*i is best identified by the absence of any teeth on the last fixed abdominal sternite (sternite 7), and by the aedeagophore. It appears to be most closely related to the Chinese *H. hammondi* Angus.

H. grandis Ill. (*aquaticus* auctt. nec (L.)).

In Scandinavia this species has a rather southern distribution, and in Finland it is known only from the Åland Islands (ANGUS 1970a). It is common round Leningrad (including Repino in the eastern part of the Isthmus Karelicus), and extends northeast as far as Archangel and Syktyvkar (Komi ASSR) and east as far as Moscow.

H. brevipalpis Bed.

Common round Leningrad, and extending eastwards to Perm and northeast to Archangel and Ukhta. Some Finnish examples are dark grey in colour, but do not belong to *H. montenegrinus* Kuw., which is brownish and has a larger aedeagophore. *H. guttulus* Motsch., a Caucasian species, is unrelat-

ed and bears a closer resemblance to *H. glacialis* Villa, from which it is at once distinguished by the quite different aedeagophore (ANGUS 1970b:255 & 285, fig. 7).

H. arvernicus Muls.

In Fennoscandia this species has a restricted distribution, embracing only Denmark, S. E. Finland and the Kola. It is apparently widespread in Estonia, and also occurs round Leningrad, Bologoe and Novgorod. I have also seen specimens from the Murman coast and Ukhta.

H. glacialis Villa.

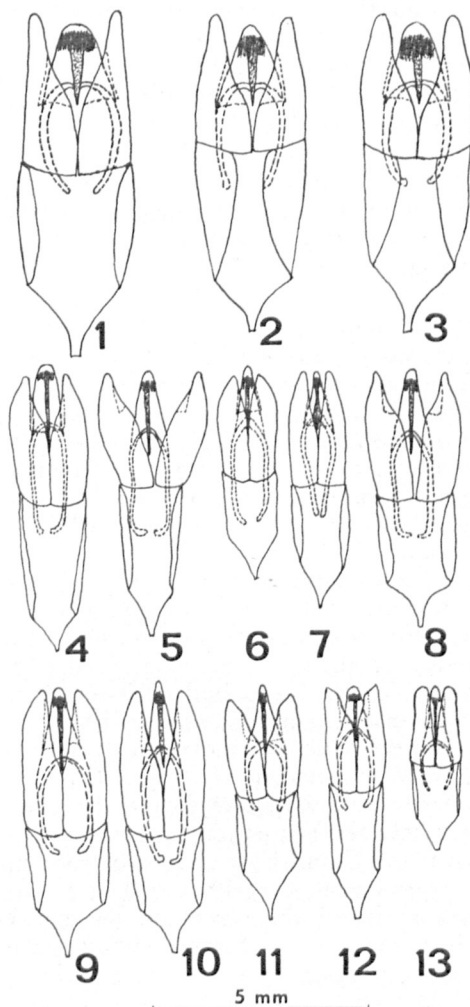
This species has a very western distribution, and the only Russian specimen I have seen from an area not already given in the Catalogus is from Polyarniy, near Murmansk.

H. granularis (L.).

This is a very widely distributed species. Its range extends north to Ukhta and Ust Tsylma, and east to Irkutsk. So far I have not seen the brachypterous form (var. *ytensis* Sharp) outside the British Isles.

H. discrepans Rey.

This species was widespread round Leningrad in May 1970, in pools left by melting snow. It occurred west of Repino and thus within the province of Isthmus Karelicus. Superficially it most resembles *H. granularis*, but is at once distinguished by the long aedeagal struts (Fig. 7). Occasionally larger darker specimens may resemble *H. flavipes* F. or *obscurus* Muls., but the aedeagophore of *H. flavipes* is always larger and has a slight subapical sinuation on the outer margin of the parameres (Fig. 4), while that of *H. obscurus* has the aedeagal tube longer, at least half the length of the parameres (Figs. 5 and 6). It is



FIGURES 1—13. Aedeagophores of *Helophorus* spp. The linear scale represents 0.5 mm. 1—3, *H. aquaticus* (L.), 1 with the outer margins of the parameres straight, 2 and 3 with them curved; 4, *H. flavipes* F.; 5 and 6, *H. obscurus* Muls.; 7, *H. discrepans* Rey; 8, laboratory hybrid, ♂ *H. obscurus* × ♀ *H. flavipes*; 9 and 10, *H. strigifrons* Thoms.; 11, *H. laticollis* Thoms.; 12, *H. pumilio* Er.; 13, *H. croaticus* Kuw.

possible that *H. discrepans* is the species recorded as *obscurus* by KANGAS (1968) from Metsäpirtti in Isthmus Karelicus, and possibly also Åland. *H. discrepans* is widely distributed in eastern Europe, and further west on the mountains. I have seen specimens from the mountains of Anatolia and Transcaucasia, as well as the Taurus mountains of northern Persia.

H. minutus F.

Although this species is shown by the Catalogus as being rather widespread in Finland I have not seen any specimens from the Leningrad region. It is present in the Estonian collections, with some rather large females. I therefore have to regard the identification of the single Estonian female recorded as *H. lapponicus* Thoms. ANGUS 1969:14) as doubtful, as it could be one of these large *minutus*. *H. minutus* apparently ranges east across Russia at about the latitude of Kiev to west Siberia. Here both *minutus* and *lapponicus* are present, along with many specimens which are morphologically intermediate between the two. This appears to be a very complicated situation as where the two species coexist on the island of Öland they show no trace of intergradation. Clearly it will be necessary to breed these two species in the laboratory to get further insight into what is happening in western Siberia.

H. lapponicus Thoms.

This species extends further south in the eastern parts of its range. It is apparently rare in Karelia Ladogensis, but I have seen a specimen from Pälkjärvi, in the Helsinki museum. I have not seen any material from the Leningrad region, but it occurs at Yaroslavl (*H. jakowlewi* Sem.), and ranges across Siberia and into Mongolia. It is interesting that this species has isolated populations on Öland, in the Caucasus (*H. satunini*

Zaitzev), and on the Cantabrian mountains of northern Spain, where it has been taken by both J. Balfour-Browne and myself. In this area it also meets but does not complex with *H. minutus*. Such isolated populations, outside the main area of distribution of the species, suggest relicts from glacial times, but *H. lapponicus* has so far not been found as a fossil among assemblages of Coleoptera from the colder phases of the Last Glaciation in Britain, but it does occur in the relatively warmer Upton Warren Interstadial, about 43,000 years ago. (See COOPE, MORGAN and OSBORNE 1971, for an account of climatic fluctuations during the last glaciation, and the Coleopterous faunas associated with them). At this time, as on Öland today, both *H. lapponicus* and *minutus* occur together, without any sign of intergradation.

H. fulgidicollis Motsch. (*mul santi* auctt. Brit.).

In Scandinavia known only from Denmark and Skåne, this species has an exclusively coastal distribution, inhabiting salt marshes along the coast of the North Sea, English Channel and Irish Sea. It is also known from the Atlantic coast of southwest Ireland (BALFOUR-BROWNE 1958), and HORION (1949:45) gives a record for Lisbon. In the western Mediterranean it occurs on the southern coast of Spain, Morocco, the Balearic Islands, southern France and Italy, at least in the north west. It should be found on coasts of the Bay of Biscay, but as yet there are no records. It is unknown in Russia.

H. griseus Herbst.

Hitherto recorded from only southern Norway and Sweden, and Öland, this species also occurs in the Isthmus Karelicus, where I took it near Repino in May 1970. I also took it at Petrokrepost,

where the R. Neva leaves Ladoga, and to the south and west of Leningrad. The ZIN collection contains material from the western Ukraine (Kamenets Podolskiy), the Crimea and Armenia. In April 1970 I took it near Odessa.

H. longitarsis Woll. (*erichsoni* Bach).

Records of this species in the Catalogus refer to *lapponicus* (STRAND 1965). In Russia it appears to be a very southern species, the ZIN collection containing material from the southern Ukraine, the Crimea, Transcaucasia, the southern end of the Urals, and Karaganda in northern Kazakhstan. However, it occurs in northern Germany, so it may be found in Denmark and southern Sweden.

H. nanus Sturm.

This is one of the most widely distributed of all the Palaearctic *Helophorus*, with records ranging from Ireland (BALFOUR-BROWNE 1958) to Vladivostok. In Russia I have seen specimens from Ust Tsylna, Ukhta, and right across Siberia to Lake Khanka. In the south I have seen specimens from the Caucasus (Bakuriani, Tabitschuri), and the Orenburg at the southern end of the Urals.

H. redtenbacheri Kuwert (*pumilio* auctt. nec Er.)

ANGUS (1971b) gives the identification of Erichson's types of *H. pumilio* and Kuwert's *redtenbacheri*, explaining the changes in nomenclature. In view of the Danish, southern Swedish and central European distribution of this species it is surprising to find that the only material in the ZIN collection is from Saratov, on the middle Volga. I found the species to be not uncommon near Novosibirsk and Karasuk in western Siberia, and Sharp's *H. spinifer*, a synonym of

redtenbacheri, is from the Orenburg. It therefore seems that this species has been largely overlooked in Russia. It could be confused with *granularis* or possibly *discrepans*, but it is easily distinguished from both of these by its eight-segmented antennae.

H. pallidus Gebler.

The records shown in the Catalogus show this species as having a rather sporadic and fairly northern distribution in Fennoscandia. The specimens in the ZIN collection are from Yaroslavl, Ukhta, the forest and tundra near Salekhard, and Yakutia. *H. parallelus* Motsch., described from northern Kazakhstan, is also *H. pallidus*, on the basis of the types in the Motschulsky collection in Moscow, and I took the species in the adjacent part of southwest Siberia, so that it appears to be to some extent a steppe species. However, the most interesting record to be added to the distribution is from Estonia, from where I have seen two specimens labelled »Mat-salul-rannaküla, 23. 10. 67», coll. V. Soo.

H. laticollis Thoms.

Despite its predominantly north eastern distribution in Europe, *H. laticollis* apparently does not extend very far east in Russia. The most easterly specimens in the ZIN collections are from the Yaroslavl area. It was very abundant near Peterhof and Repino in May 1970. There is a specimen from Iceland in the Paris museum.

H. pumilio Er. (*fallax* Kuw.).

The synonymy of this species is given by ANGUS (1971b). Although KUWERT (1886), in this description of *fallax*, mentions a Finnish specimen, there are no other Fennoscandian records of this species, and there is no labelled Finnish specimen in Kuwert's collection. Further,

KUWERT had included a *H. strigifrons* Thoms. among his types, so his record cannot be trusted.

H. pumilio could be mistaken either for *laticollis*, or for *strigifrons* in which the pronotum is unusually smooth and highly arched. It is clearly separable from *laticollis*, as in *pumilio* the outermost interstices of the elytra are broadly visible from below, forming (pseudepip-leura) outside the epipleura. Such pseud-epipleura are well developed in *H. strigifrons*, but absent in *laticollis*. *H. strigifrons* normally has the pronotum less highly arched and more granulate than *pumilio*, and has a very different aedeagophore (Figs. 9 and 10), with the paramere tips evenly curved, while in *pumilio* they are strongly angled (Fig. 12). The aedeagophore of *H. laticollis* (Fig. 11) is more like *pumilio*, but is less elongate.

H. pumilio was very common to the south and west of Leningrad (Pavlovsk Park and Peterhof) in May 1970, in pools left by melting snow. However, I did not find it at Repino, nor at Petrokrepost on Ladoga, so it may be that Leningrad is the northeast limit of its range. The ZIN collection contains material from Yaroslavl, Bologoe, Tomsk and the Yenisei. I took it near Irkutsk in June 1970. In the east this is a pool inhabiting species, but in France and southern Germany it is usually found in streams.

H. strigifrons Thoms.

This species, widespread in Fennoscandia, is also numerous round Leningrad. The ZIN collection contains material from Yaroslavl, Smolensk and the Salekhard region (including the tundra). I took it near Novosibirsk and Irkutsk in May and June, 1970.

H. croaticus Kuwert.

In central Europe this species occurs

mainly in Austria, Croatia and southern Germany, though it is known from the Rhineland and d'ORCHYMONT (1924) records it from Belgium. This specimen, from Oostacker, is in d'Orchymont's collection. However, in Russia its range extends further north to Ukhta, Yaroslavl and Moscow. It also occurs near Yakutsk in east Siberia, where I took it in July 1970. It is thus possible that it may occur on the Kola.

H. croaticus has a granulate arched pronotum and the stem of the Y-groove on the head expanding anteriorly. Its general appearance is a little like *H. arvernensis*, from which it is at once distinguished by the narrow asymmetrical apical segment of the maxillary papi. The aedeagophore is shown in Fig. 13.

H. flavipes F.

This is one of the commonest and most widespread of all the Fennoscandian *Helephorus*, and is abundant round Leningrad. However, in Russia it does not range nearly so far east as *strigifrons* and *pumilio*, extending only to Ust Tsylna and Ukhta in the north and Yaroslavl and Moscow further south. *H. flavipes* is commonly found in acid water and is one of the few European species to occur in *Sphagnum* pools. The aedeagophore (Fig. 4) is very distinctive, with long aedeagal struts and basal piece, sinuate paramere apices, and dark brown colour.

The following records may be added to those shown in the Catalogus: *Ks*: 1 ♂, Kuusamo, 3.VII.1967, R. B. Angus; *Li*: 1 ♀, on the Puksalskaidi above the Kevo research station of Turku University, 11.VII.1967, R. B. Angus; *Lmur*: Polyarniy near Murmansk, coll. ZIN.

H. obscurus Muls (*walkeri* Sharp).

Closely resembling *H. flavipes*, this species is still apparently the subject of

confusion. The aedeagophore (Figs. 5 and 6) is pale yellow in colour and normally has the basal piece relatively shorter than in *flavipes*. However, Fig. 5 shows the aedeagophore of a British specimen in which the basal piece is exceptionally long. This is the only specimen I have seen with this condition. Another aedeagal character shown by mainland European specimens of *H. obscurus* (*H. obscurus obscurus* (ANGUS 1971a)) is the *absence* of any sinuation on the outer margins of the parameres, near the apex. STRAND (1965) gives two figures of the aedeagophore of *H. flavipes*, and both clearly show the sinuation typical of that species. Dr. Strand kindly sent me the specimen figured in his fig. 11a, and it is a normal *flavipes*. Further, the figure given for *obscurus* by LOHSE (1971:123, fig. 22a) also shows the sinuate paramere tips of *flavipes*, and his remark that *obscurus* favours acid water also suggests *flavipes* as *H. obscurus* is characteristic of basic water (ANGUS 1967), especially in the northern parts of its range.

Apart from the aedeagophore, *H. obscurus* also differs from *flavipes* by the rather broader body form, with a more rounded elytral apex (in the field it often looks more like *strigifrons* than *flavipes*), and the more strongly and sharply angled submedian grooves of the pronotum.

ANGUS (1970c) hybridised *H. flavipes* and *obscurus* in the laboratory, producing infertile offspring which did not resemble anything known in nature. Fig. 8 shows the aedeagophore of one of my hybrids, and it may be seen to have the sinuate parameres of *flavipes* combined with the short basal piece of *obscurus*. The aedeagophores of these hybrids are brown in colour, though a little paler than mature *flavipes*.

The only Scandinavian *obscurus* I have seen are Thomson's types of *H.*

aeneipennis, from Skåne. HANSEN (1970) records it from Denmark. It is absent from the whole of northern Russia, and the only specimens in the ZIN collections are from the Crimea and adjacent Black Sea coast, and from Transcaucasia. It is thus very unlikely that KANGAS (1968) had this species from Isthmus Kareliscus, through, as mentioned above, he may have had *H. discrepans*. In my 1971a paper I mention that *obscurus* is widely distributed in western Europe, with the exception of the Iberian Peninsula. However, in July 1972 I took it in three places along the northern coast of Spain. It apparently does not occur away from the coast there.

Acknowledgements. My Russian records of *Helophorus* are the result of work done in the course of a 10 month visit to the U.S.S.R. under the exchange scheme sponsored by the Royal Society and the Academy of Sciences of the U.S.S.R. I thank both bodies for enabling me to visit Russia under their scheme, and also the staff of the Zoological Institute, Leningrad, and the other institutes where I worked, for all their help and kindness.

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Ett fall av inplantering av *Graphosoma lineatum* (L.) (Heteroptera, Pentatomidae) i Finland.

I samband med undersökningar över utbredningen av ovanstående art i Nord-europa, har det kommit till min kännedom att en svensk entomolog inplanterat arten i SW-Finland.

Inplanteringen gjordes på ön Kadermo (Ab) i Bredsundsfjärden, ca. 10 km. NW om Hangö. I juni 1971 utsattes på öns södra del 16 exemplar, vilka befann sig i reproduktiv fas. Enligt uppgift återfanns inga exemplar varken 1972 eller 1973.

Med hänsyn till att arten hör till dem

som kan uppträda spontant i sydligaste Finland, anser jag det viktigt att på detta sätt fästa finländska entomologers uppmärksamhet på inplanteringen. Vid eventuella fynd av arten, särskilt i SW-Finland, bör hänsyn tagas till ovan nämnda förhållande.

Slutligen är jag också tacksam för meddelande om fynd av arten från Finland under adress Zoologiska Institutionen, Stockholms Universitet, Box 6801, S-113 86 Stockholm.

Carl-Cedric Coulianos

Rutsystems-beteckning för angivande av fyndplats inom biologisk forskning

De naturvetenskapliga museerna, samfunden och föreningarna har kommit överens att inom de biologiska vetenskaperna använda enhetskoordinatsystemet för betecknande av fyndplatser och iakttagelseorter. Det är därför att rekommendera att alla entomologer inför koordinatbeteckningar på de etiketter de låter trycka.

Enhetskoordinatsystemet är benämningen på ett rätvinkligt koordinat- och rut-system, vars p-axel sammanfaller med meridianen E 27° och som är angivet på de grund- och topografiska kartor i skala 1 : 20 000 och 1 : 100 000 som har utkommit efter år 1962, samt på de år 1967 utkomna generalkartorna i skala 1 : 400 000. Ifrågavarande koordinatsystem anges på de nämnda kartorna med röda (bruna) rutor eller marginalbeteckningar. Enhetskoordinaterna är desamma som de på grundkartorna med svart angivna sifferbeteckningar och rutor, vilkas p-axel sammanfaller med p-axeln i enhetskoordinatsystemet.

Koordinattalet betecknar ett kvadratisk område, vars storlek bestäms av antalet siffror i koordinatbeteckningarna. Områdena kan sammanslås till större eller delas i mindre rutor med decimaler. Därvid är koordinatbeteckningarnas sifferantal i motsvarande grad mindre eller större. Varje rutas decimalindelning sker med siffrorna 0 till 9 nedifrån uppåt och från vänster åt höger. Koordinatbeteckningen är tvådelad. Dess första del anger rutans p-koordinat och dess senare del rutans i-koordinat. Mellan dessa delar kan i skrift användas ett kolon. p-koordinaten börjar alltid med siffran 6 eller 7, vilken betecknar 1 000 km. i:s värde i origo vid p-axeln är 500 km. Antalet siffror i koordinattalen är sålunda alltid udda och p innehåller alltid en siffra mera än i.

Angivande av koordinaterna för en ort eller plats sker med den noggrannhet, som i det aktuella fallet kan betecknas som ändamålsenlig. Om t.ex. platsens läge anges med en noggrannhet av 1 kvadratmil, är koordinattalet 5-siffrigt (t.ex. 669 : 40 eller 66940). Om angivelsen sker med noggrannheten av 1 ha är koordinattalet 9-siffrigt (t.ex. 66940 : 4009 eller 669404009). I sammandrag gällande utbredningsuppgifter och i andra därmed jämförbara fall insamlas uppgifterna i regel per grundruta, varmed avses en ruta vars yta är 1 kvadratmil. Vid lokala undersökningar används givetvis mindre rutor.

Utöver platsangivelse baserad på rutsystemet bör platsbeteckningen lämpligen samtidigt även ske med angivande av kommunens, byns, terrängformationers osv. namn, likaså skall beteckningarna för de naturvetenskapliga provinserna fortfarande användas. Vid användningen av kommunernas namn är det skäl att beakta, att kommunnamnet betecknar det område, som kommunen omfattade under det år, under vilket iakttagelsen gjordes.

Finland 669 : 40

N. Sibbo

24. VII. 1971

Kalle Johansson

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Distributional and systematic notes on *Saldula fucicola* (J. Sahlb.) and some other shore bugs of Eastern Fennoscandia (Heteroptera, Saldidae)

Per Lindskog

Abstract

LINDSKOG, PER: Distributional and systematic notes on *Saldula fucicola* (J. Sahlb.) and some other shore bugs of Eastern Fennoscandia (Heteroptera, Saldidae). — Notulae Entomol. 54:33—56. 1974.

The paper is largely based upon a critical study of the collections of the Zoological Museum in Helsingfors. The following new records are reported: *Saldula palustris* (Dgl.): Finland, Estonian SSR; *S. fucicola fucicola* (J. Sahlb.): Sweden, Norway, Estonian SSR; *Chartoscirta cocksi* (Curt.): Eastern Fennoscandia (Karelian Isthmus). *S. palustris* from the shores of the Baltic appears to be invariably macropterous, in contrast to the pterygo-dimorphic state of populations from the tidal coasts of Western Europe. Some structural and ecological differences between *S. palustris* and *pallipes* (F.) are pointed out and figured. The rank of *S. fucicola* (J. Sahlb.) as a good species is confirmed. It is more widely distributed in Fennoscandia than formerly believed. The validity of treating *S. vestita* (Dgl.) as a synonym of *S. fucicola* as done by Cobben in 1960, and which has been objected to by some workers, is examined. The present author is ready to accept their conspecific status and there are signs of a clinal intergradation of the two forms in Eastern Fennoscandia. Some peculiarities in the distribution patterns of these forms may possibly warrant a subspecific recognition later on. The more meridional and Eurosiberian *vestita* ranges from Central Siberia (Lena R.) to Britain. Differentiating characters between *S. fucicola-vestita*, *saltatoria* (L.) and *c-album* (Fieb.) are pointed out and figured.

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Introduction

Recently I had the opportunity to study the rich collections of Saldidae (shore bugs) of the Zoological Museum at the University of Helsingfors, with the primary aim to obtain material for some current revisionary work on the *Saldula saltatoria* group of species. Moreover, concomitant to a critical examination of the entire Palearctic material of the family deposited there, many cases of misidentified specimens or over-

looked species were revealed, including previously published material. This result is hardly surprising, considering the many taxonomic problems presented by this group of insects.

Some results of this revision are presented in this paper, where new and more interesting records from Eastern Fennoscandia and adjacent regions are reported and commented upon, including the addition of *Saldula palustris* (Dgl.) to the Finnish list of species. The main part of the present paper

however, is devoted to the problems of the taxonomic status, distribution and systematical relationships of *S. fucicola* (J. Sahlb.), *S. vestita* (Dgl.) and related members of the *saltatoria* group of species. New data, contributing to a better understanding of these much disputed forms are presented here.

Acknowledgements. — I wish to express my sincere thanks to Dr. Martin Meinander, Division of Entomology of the Zoological Museum of Helsingfors, for his kind assistance with my study of the collections and loan of material. If not otherwise stated, the material mentioned below belongs to that institution. I further thank the following persons and institutions for loan of material used at this study: Johan Andersen, Tromsø Museum, Norway; U. Göllner-Scheiding, Humboldt Museum, Berlin DDR; Ludvik Hoberlandt, Národní Muzeum, Prague ČSSR; and Torbjörn Kronstedt, Naturhistoriska Riksmuseet, Stockholm Sweden. Abbreviations of institutions: ZMH (Zoological Museum, Helsingfors), NRM (Naturhistoriska Riksmuseet, Stockholm).

I am further grateful to Mr. Gerald Woodroffe, Slough, Bucks. U. K., who kindly corrected some linguistic faults in my English manuscript.

Methods of genital studies

The figures and descriptions of genital structures (mainly the male parameres) given in this paper are based upon observations on dry preparations. This has proved the most satisfactory way of appreciating the often very slight and refined differences existing between related species of Saldidae in the shape and dimensional relationships of these structures. Special precautions must be taken at the softening procedure preparatory to the dissection of dry preserved specimens. Strong caustic agents (KOH, NaOH) should be avoided here. These easily result in too »desclerotized» parameres, which after drying attain a quite abnormal appearance. Instead the author has made use of a weak solution of

a very active laboratory detergent for this purpose (Deconex-11, Borer Chemie, Switzerland), which has given very satisfactory results. After washing and dehydration in alcohol the dissected parameres are glued in erect position to their base on an insect card and are then observed at the appropriate angle under the binoculars. The figures in this paper are made with the aid of a drawing apparatus attached to a Leitz Large Field Stereo-Microscope.

Species notes

New record for a political region is marked with an asterisk (*).

Saldula palustris (Douglas) 1874

This species has not previously been recognized in Finland but its occurrence here was anticipated by LINNAVUORI (1967). The following findings have been confirmed for Finland and also for the adjoining region of the USSR. The species had hitherto been confused with *S. pallipes* (F).

Finland *: *Al*: Kõkar 7.8.1951 5 ♂ 5 ♀ (Håk. Lindberg); 2 ♂ 2 ♀ (idem). Lemland, Nätö 7.8.1969 2 ♀ (Lindskog) (coll.ead.). *Ab*: Korpo, Jurmo 10.8.1960 3 ♂ 3 ♀ (Meinander). *N*: Ekenäs, Tvärminne 2 ♂ (Hiitonen); ? 8.1932 1 ♀ (A. Luther); 19.7.1932 1 ♂ (G. Luther); 1 ♂ 6 ♀ (Frey); 10.7.1932 8 ♂ 3 ♀ (Håk. Lindberg); 1 ♂ 3 ♀ (idem); 18.7.1964 5 ♂ 1 ♀ (Meinander). Hangö, Täcktom 14.5.1931 1 ♂, 19.7.1931 1 ♀, 5.8.1931 1 ♀, 5.8.1932 1 ♀, 10.7.1954 2 ♀ (Håk. Lindberg). Hangö 1 ♂ (J. Sahlberg).

USSR (White Sea Coast): *Lim*: Kandalaksh 1 ♂ (Hellén) *Kpoc*: Solovetsk 1 ♀ (Levander) »Karelia rossica» 1 ♂ (ex coll. Reuter and labelled *Salda palustris*. Apparently the find by J. Sahlberg mentioned by Reuter 1895, p. 50:42). »Mar.Alb.» 1 ♀ (J. Sahlberg) (Coll. NRM). Specimen labelled by Sahlberg as »sp. ign. saltatoriae affinis», and has later been correctly identified as *S. palustris* (R. H. Cobben det.).

Estonian SSR *: Ormsö (Vormsi) 5.6.1922 3 ♂ 5 ♀ (Håk. Lindberg). Nuckö (Noarootsi) 6.6.1922 1 ♀ (idem).

Habitat and distribution. *S. palustris* was originally recognized as a halophilous shore bug inhabiting tidal mud flats, salt marshes and estuarine shore lines (see SOUTHWOOD & LESTON 1959). This halophilous character seems to be confirmed by most recent records from Europe. In addition to the coastal countries enumerated by COBBEN (1960), the species has later been reported from some inland localities in Central and South Eastern Europe (WRÓBLEWSKI 1966, BENEDEK 1970), as well as Mongolia (HOBERLANDT 1971b). Some of these records apparently refer to saline habitats, whereas in other cases the salinity conditions have not been specified.

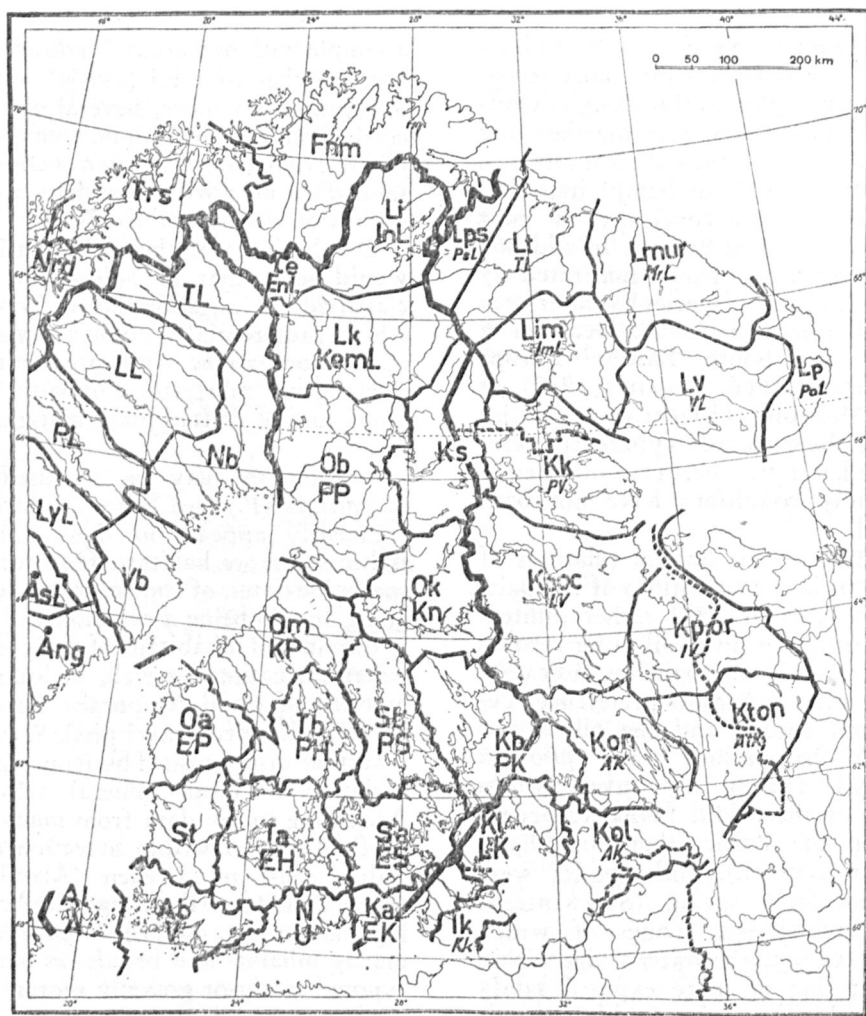
The data on the habitat relations of *S. palustris* in the conditions of the Baltic coastal area are still rather limited. The observations and collecting records made here so far nevertheless indicate a close affinity in habitat preferences between this species and the allied and likewise halophilous *S. pilosella* (Thomps.). During my investigations in 1964 of the saldid fauna at Bejershamn on the Baltic island of Öland (south of Sweden), both species were found in early spring (overwintered adults) among wet strings of wrack (*Zostera*) close to the water's edge within the drift line of more exposed sandy shores and also on the muddy littorals of sheltered bays, which were exposed as a result of the prevailing low water level, typical of the spring and early summer period of the Baltic area. In early August, at a high water situation, the adult bugs (1:st gen.) and larvae (2:nd gen.) of the two species were confined to narrow strips of bare wet substrate between the water line and the high and gravelly shore banks and they further frequented floating strings of wrack. The few specimens of *S. palustris* from Al: Nåtö (above) were similarly obtained in

a sample with numerous *S. pilosella* from bare patches of mud (gyttja) within a low grassy sea shore. Several of the records from the Tvärminne area (N) originate from Henriksberg, a well-known sand dune area with abundant accumulations of wrack (mainly *Fucus*).

On the basis of these observations it would seem that *S. palustris* may be classified as a halophilous shore bug which preferentially colonizes wet and open shore zones with predominantly organogenic substrates and with a rich admixture of drifted plant material (ävjä).

S. palustris may be confused with *S. pallipes* (F.) (see below), which also frequently appears in these kinds of Baltic sea shore habitats. However, this species deviates, of course, from the foregoing ones in being a common and widely distributed inhabitant of various fresh water formations as well, including the margins of small temporary water bodies (e.g. flooded gravel pits). *S. pallipes* is further distinguished by its marked association to clean mineral substrates. According to my data from many years of field studies within a section of the Baltic coast of Sweden (Åland Sea) (Upl: Vaddö and the Öregrund Archipelago, about Lat. 60°N.), *S. pallipes* primarily inhabits and breeds on bare and exposed sandy or gravelly shores, where it often occurs as the sole representative of the shore bugs. Except for the highly specialized (i.e. exclusively lapidicolous) *S. scotica* (Curt.), *S. pallipes* is further the only saldid species within this region to have been found breeding, although infrequently, within the geolittoral zones of bare and extremely exposed sea shore rocks.

The Finnish localities of *S. palustris* reported here apparently form a narrow band stretching in direction WNW around the 60th latitude from the Hangö Peninsula (at the mouth of the Gulf of



Biogeographical provinces. (Parallel abbreviations correspond to province designations in Finnish (not used in this work)).

East Fennoscandia:

Ab = Regio aboënsis
 Al = Alandia
 Ik = Isthmus karelicus
 Ka = Karelia australis
 Kb = Karelia borealis
 Kk = Karelia keretina
 Kl = Karelia ladogensis
 Kol = Karelia olonetsensis
 Kon = Karelia onegensis
 Kpoc = Karelia pomorica occidentalis
 Kpor = Karelia pomorica orientalis

Ks = Regio kuusamoënsis
 Kton = Karelia transonegensis
 Le = Lapponia enontekiensis
 Li = Lapponia inarenensis
 Lim = Lapponia imandrae
 Lk = Lapponia kemensis
 Lmur = Lapponia murmancia
 Lp = Lapponia ponojensis
 Lps = Lapponia petsamoënsis
 Lt = Lapponia tulomensis
 Lv = Lapponia Varsugae

N = Nylandia
 Oa = Ostrobothnia australis
 Ob = Ostrobothnia borealis
 Ok = Ostrobothnia kajansensis
 Om = Ostrobothnia media
 Sa = Savonia australis
 Sb = Savonia borealis
 St = Satakunta
 Ta = Tavastia australis
 Tb = Tavastia borealis

Norway:

Fm = Finnmark
 Nrd = Nordland
 Trs = Troms

Sweden:

LL = Lule Lappmark
 LyL = Lycksele Lappmark
 Nb = Norrbotten

PL = Pite Lappmark
 Vb = Västerbotten
 Ang = Angermanland
 AsL = Åsele Lappmark

— international boundary.
 — boundary of province when not coinciding with international boundary.
 - - - - - boundary of regions of the U.S.S.R. (from south to north, Leningrad Region, Karelian A.S.S.R. and Murmansk region).

Finland) via the outer archipelagoes (Jurmo, Kökar) to Åland (Nåtö). The marked clustering of records at Hangö, partly reflecting the proximity of the Zoological Station at Tvärminne, is apparent. Southwards, on the opposite shores, the Estonian localities form a natural connection with this zone. Considering the halophile preferences of *S. palustris* we should of course note that this narrow area of occurrence coincides with the region for the highest salinities of the coastal waters in Finland (around 6 ‰).

The Swedish records of *S. palustris* from the Baltic area are restricted to the southernmost provinces *Sk*, *Bl*, *Öl*, and *Gtl*. However, the lack of records from the coast further north (notably *Sm*, *Ög*, *Sdm*) might just as well be the result of insufficient search and/or confusion with *S. pallipes*. My failure to find *S. palustris* still further north within the well investigated area at the Åland Sea mentioned above, i.e. about the same latitude as the Finnish records of the species, is, on the other hand, likely to prove an actual absence or at least an extreme rarity of the species here.

An extension of the range further north on the Finnish compared with the Swedish side of the Baltic, as suggested by the present records of *S. palustris*, would, of course, be in good accordance with the prevailing salinity conditions in this part of the Baltic, i.e. the north-eastern displacement of the isohalines. Analogous distribution patterns are known in other groups of halophilous insects and plants in this region.

Taxonomy and variation. The status of *S. palustris* as a valid species was not generally accepted for a long time following the original description by DOUGLAS (1874), and most authors considered it merely as a small and dark coastal variety of the common *S. pallipes*. Later WAGNER (1950) showed

that *S. palustris* and *pallipes* could be separated from each other on the basis of differences in the serial or »eunomic» variation of the hemelytral colour pattern. These characters were elaborated further by COBBEN (1960), who also showed that the hairs carried by the inner protuberance of the male parameres, i.e. the processus sensualis, were distinctly shorter in *S. palustris* compared with *pallipes*.

Differences in the parameres of the two species are illustrated here in Fig. 1, showing the situation in males of Baltic coastal origin (about 15 ex. of each species examined). In *S. pallipes* the hairs of proc. sens. are long and bent slightly upwards forming a conspicuous tuft. In *S. palustris* they are considerably shorter and straightly projecting and in most cases the situation well agrees with COBBEN's (1960) figure. However, it is possible to trace some variability in the length of the hairs and I have chosen to figure a specimen where they are slightly longer than usual. In addition, the parameres of *S. pallipes* are considerably stouter if compared with *palustris* in my material as shown by the figure. Further, if the parameres of *S. pallipes* are observed in inner view (cf. figure), a small tooth-like projection or edge on the side of proc. sens. becomes visible. This structure was not observed in *S. palustris*.

A reliable separation of *S. pallipes* and *palustris* from a combination of purely outward characters is in many instances quite possible. In larger samples the differences in the hemelytral colour patterns become apparent as depicted by COBBEN (1960) (and reproduced by LINNAVUORI 1967). There is considerable overlap between the species, however, in fact more extensive than suggested by COBBEN's figures (1960), and single specimens frequently turn up, which cannot be identified on these criteria alone. However, as stressed by

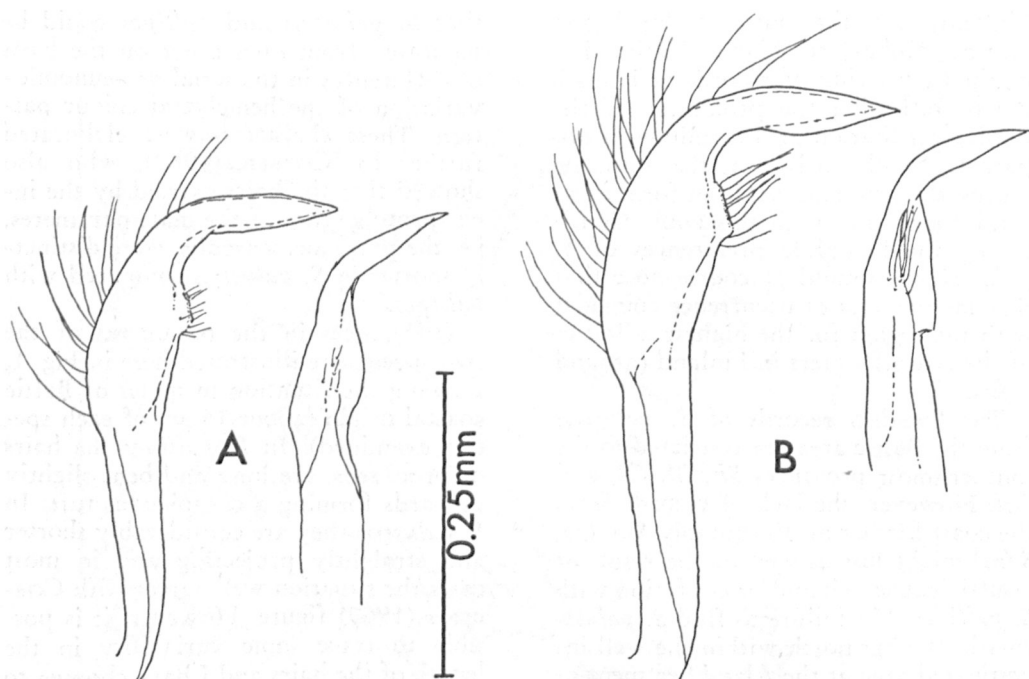


FIG. 1. Right paramere, front and inner view. — A. *Saldula palustris* (Dgl.), Finland Al: Kökar. — B. *Saldula pallipes* (F.), Finland Al: Eckerö, Högsten.

WOODROFFE (1966), *S. palustris* (at least more northern populations) is distinguished by having the hemelytra covered by a denser, slightly longer and more erect pubescence than *S. pallipes*. This has proved to be a good discriminating character when dealing with Fennoscandian material of these species. There are also some fairly constant differences in the degree of contrast between the dark and light markings of the hemelytra. Thus *S. palustris* stands out as having a less variegated colour pattern compared with *pallipes*. While in the lighter colour forms of *S. pallipes* the pale markings may partly be almost pure bone-white, they are in *palustris* generally more yellowish and sometimes have a slightly oily lustre (thereby resembling *S. pilosella*).

According to COBBEN (1959), a tendency towards a regular decrease in body length accompanied by a relatively still greater decrease in its width becomes evident when populations of *S. palustris* from northwestern Europe down to north Africa are compared. Apart from their larger body size and broader stature, populations from northern latitude were said to be more short-winged (submacropterous) as a rule, in contrast to the mainly macropterous populations in the south. The northernmost populations were represented by material originating from Holland and England (COBBEN 1959, Table 1).

It may now be of some interest to examine how the Fennoscandian material of *S. palustris*, which more recently has become available for study, com-

TABLE 1. Total length (mm) and ratio length / width in *Saldula palustris* (Dgl.) of different geographic origin.

		length (extremes and mean)			ratio length / width (extremes and mean)		
Sweden. Ö1: Bejershamn	25 ♂♂	3.30	3.53	3.90	2.03	2.14	2.26
	18 ♀♀	3.66	4.07	4.44	1.97	2.06	2.15
Finland. N: Tvärminne	21 ♂♂	3.30	3.63	3.90	2.03	2.12	2.22
	14 ♀♀	3.84	4.05	4.50	2.00	2.08	2.15
England (1)	13 ♂♂	3.40	3.65	4.12		2.00	
	9 ♀♀	3.78	4.16	4.50		1.90	
Holland (1)	20 ♂♂	3.40	3.58	3.81		2.00	
	16 ♀♀	3.58	3.93	4.20		1.92	

(1) After COBBEN (1959).

pares with this suggested trend of latitudinal variation. Some data enabling such a comparison are given here in Table I, representing the results of my own measurements on samples of Swedish and Finnish origin (i.e. the Baltic coast), as well as COBBEN's (1959) data on Dutch and English material. From an inspection of these figures we may conclude that there are no obvious or significant differences between the different regions as far as the body length is concerned. The mean values for the ratio body length / width, on the other hand, seem to differ in a significant and consistent way. The higher values in the Baltic coastal populations, thus indicating a generally more slender body outline are as a matter of fact more close to those given by COBBEN (1959) for *S. palustris* from southwestern Europe.

The relatively broader body outline in the Dutch and English *S. palustris*, as expressed by their lower length / width ratios, is probably primarily the manifestation of a more short-winged or submacropterous (COBBEN 1959, 1960) condition of the species within this part of its range. According to the results from a study of pterygo-polymorphism and correlated development of the flight muscles in European Saldidae (LINDSKOG in prep.), the term »submacropterous» as defined and used by COBBEN (1960)

is partly applied to situations where the flight muscles are completely developed, as well as cases where they are invariably atrophied. In both cases the hind wings may be relatively well developed and reach the apex of abdomen. However, apart from some exceptions (e.g. *S. c-album* (Fieb.)), »true» submacropterous morphs (i.e. functionally flight-less) are generally recognized by having hind wings which do not reach beyond the distal margins of the hemelytral membrane cells when seen in normal resting position. In the fully developed submacropters on the other hand (= »moderately macropterous» in this paper), the hind wings surpass the membrane cells and may reach the distal border of the membrane as in the case of typical macropters (in the sense of COBBEN 1960) (= »strongly macropterous» in this paper).

No single specimen of *S. palustris* displaying true submacroptery in the present meaning (i.e. functionally brachypterous) has so far been detected in material from the Baltic region. However, in a small sample of the species from the coast of Holland (leg. Cobben) and England (Kent, Dorset, leg. Masse) available to me, there are besides macropters, several specimens possessing a markedly reduced membrane and with the hind wings just reaching the apical border of

the longest membrane cell. This is apparently the submacropterous morph referred to by COBBEN (1959) and it well agrees with the figure by WOODROFFE (1966) showing a »brachypterous» *palustris*. The state of the flight muscles in this morph was checked by me in the aforementioned material. In cases like this, where no alcohol preserved material is available for dissection, dry preserved specimens may be dissected and studied with excellent accuracy after having been gently softened in a weak solution of caustic potash and subsequently transferred to 70 % alcohol. Two specimens (1 ♂, 1 ♀) were accordingly studied in this way and the absence of flight muscles could be verified.

In summing up, there is no evidence of a further increase in body size correlated with higher latitude when comparing populations of *S. palustris* from the Baltic area with those of Dutch or English origin. Furthermore, a high incidence of submacroptery (i.e. truly flightless morphs according to the present study) is not necessarily a characteristic feature of more northern populations as might be suggested from the account by COBBEN (1959). Instead the appearance of wing dimorphic populations of *S. palustris* at the tidal coasts of Holland and the British Isles is more likely to reflect an adaptive adjustment to regional environmental conditions, which do not need to be causally related to latitude. There will be reason to return to these points in a forthcoming comprehensive study (LINDSKOG in prep.), where ecological relationships of alary polymorphism and correlated dispersal capacity of the Saldidae are being discussed.

Saldula fucicola (J. Sahlberg) 1871
and *S. vestita* (Douglas) 1874

The question of the true taxonomic status of these forms within the *S. saltatoria* group of species has been a matter

of much controversy ever since the original descriptions were published. The main issue has concerned the relationships between the older and well-recognized *S. saltatoria* (L.) 1758 and *S. c-album* (Fieber) 1859 on the one hand, and these later described species on the other. The main points in the twisted history of these forms in the literature may be summarized as follows.

S. fucicola was described on material collected among wrack rejecamenta (*Fucus*) on the southern shores of the White Sea in the Russian Karelia. Later it was also found remote from the coast at some rivers and lakes in Lapland (SAHLBERG 1920). O. M. REUTER, the foremost student of the Saldidae at that time, first considered *fucicola* as a mere northern form of the common and widely distributed *S. saltatoria*, deviating mainly through its smaller size and brachypterous condition. Later on, as a result of more thorough studies on the *saltatoria* group, he decided that *S. fucicola* (to which he also referred *S. lapponica* (J. Sahlberg) 1881) should remain as a valid species, although adding that the possibility of its being just a form of *S. saltatoria* still not could be quite excluded (REUTER 1891a). Nothing was changed in these matters in his subsequent monograph of the family (REUTER 1895). SAHLBERG (1920) followed REUTER in his conception of *S. fucicola*, including the restrictions given by that author. After this period there are very few references made to *S. fucicola* in the taxonomic or faunistic literature. LINDBERG (1932) mentioned that most specimens of *S. saltatoria* from the Petsamo area (*Lps*) belonged to the variety *fucicola*, which was claimed by him to be connected with the main form through continuous variation. In the catalogue by DRAKE & HOBERLANDT (1950) *S. fucicola* is similarly listed as a mere synonym of *S. saltatoria*.

Recently *S. fucicola* has reappeared in the literature as the name of a good species concomitant to the suppression of *S. vestita* as a synonym of this form (COBBEN 1960). No further details about the precise arguments for this action have so far been given by that author, however.

S. vestita was described from material collected in southern Scotland. (DOUGLAS 1874). As with *S. fucicola* there was much doubt about its rank as a separate species and it was sometimes considered a variety of *S. saltatoria* or, alternatively, a macropterous form of *S. c-album*. The latter view was strongly supported by REUTER (1880, 1891a), who further synonymized his *S. dubia* (Reuter) 1884 (from Western Siberia) with *vestita*. The decisive argument for Reuter to consider *S. vestita* as a macropter of *c-album* was that both forms repeatedly had been found together in nature. Among contemporary authorities, SAUNDERS (1892) was first reluctant to accept Reuter's view, thereby pointing out some characteristic features separating *S. c-album* and *vestita* and instead listed it as a variety of *S. saltatoria*. Later he was apt to concur upon the identity with *S. c-album* as both forms were found on a locality where no *S. saltatoria* were present (NEWBERY 1902). Also BUTLER (1923) considered *vestita* as a macropterous form of *S. c-album*, again on the basis of their co-occurrence in nature.

In 1947 WAGNER re-established *S. vestita* as a good species on the basis of a study of material collected on the banks of the Elbe in the vicinity of Hamburg. It was then recorded from Holland (COBBEN 1950, 1957) and, as mentioned above, subsequently synonymized by the same author with *S. fucicola* in STICHEL's »Wanzentabellen» (COBBEN 1960).

WAGNER (1961, 1966) did not adhere to COBBEN's conception of these forms

and still retained the name *vestita* in the sense of a separate species known to him only from northern Germany, Holland, and Britain. As the occurrence of this form in Poland was reported on by WRÓBLEWSKI (1966), it is similarly referred to as *S. vestita*. LINNAVUORI (1967) mentioned *S. fucicola* from Lapland, obviously referring to older records (e.g. SAHLBERG 1920) and no recent revision of the Eastern Fennoscandian material of these forms has apparently been undertaken.

The present author was recently confronted with the *S. fucicola-vestita* problem in connexion with studies on the seasonal development and ecology of Saldidae within a mountainous area of Swedish Lapland. Here I encountered what first appeared to be a small and predominantly short-winged form of *S. saltatoria*. However, it soon turned out to differ constantly from typical *saltatoria* in some larval characters and in the shape of the male parameres. Some characteristic features of the hemelytral colour pattern together with the brachypterism and the geographic occurrence strongly suggested its identity with the true (nominate) form of *S. fucicola* as it was diagnosed by J. Sahlberg and Reuter. However, no specimen in my material was endowed with that kind of a short and dense golden pubescence so conspicuous in the reference material available of *S. fucicola* (leg. & det. Cobben) from Holland (= *vestita* Dgl. sensu Wagner) and which is mentioned in the key by COBBEN (1960) as a characteristic feature shared with the northern nominate form.

In view of the conflicting statements and conceptions of these forms in the literature it was found necessary to undertake a renewed revision of the *saltatoria* group of species. This study which not yet has been finished will appear as a separate paper. The results hitherto

gained and presented in the present paper nonetheless permit some more definite statements to be made as to the systematical and distributional relationships of the *S. fucicola-vestita* complex and its delimitation from allied forms.

The collections of ZMH contain a fairly rich material of *S. fucicola-vestita* from Eastern Fennoscandia as well as Siberia, which turned out to be well suited for elucidating some of the systematical problems discussed above. The Siberian records of the *vestita* form mentioned below are based upon material collected by earlier Finnish zoologists such as J. Sahlberg, Sundman, Wuorentaus, Poppius, and Ehnberg and have been published under various species names (*S. c-album*, *S. dubia*, *S. saltatoria*, *S. pallipes*) (SAHLBERG 1878, REUTER 1884, 1891b, LINDBERG 1921, 1928). The material from the Ob — Yenisei Expedition in 1876 (Sahlberg 1878) is deposited in NRM, Stockholm.

Below the names of those biological provinces are given where *S. fucicola-vestita* has been recorded in Fennoscandia and adjacent parts of the USSR. Information of exact localities and other relevant data will appear in the future paper on the *saltatoria* group announced above.

Of the records above, only those from USSR: *Ik*, *Kol* refer to *S. fucicola* = *vestita*, the rest to *S. fucicola* s.str.

In this paper reference will be made to the *vestita*, viz. the *fucicola* form (i.e. *S. fucicola* s.str.) when summarizing the distribution pattern and other features of the complex.

Finland: *N*, *Ab*, *Om*, *Ob*, *Kn*, *Ks*, *Lkem*, *Le*, *Li*.

USSR (Eastern Fennoscandia): *Ik*, *Kol*, *Kpor* (type localities of *S. fucicola*), *Kpor* (according to SAHLBERG 1881), *Lp*, *Lps*, *Lt*.

Estonian SSR *: St. Rågö (5. 6. 1933 2 ♂, leg. Håk. Lindberg). (Note: this locality is the larger of the two islands known as Pakrisaared situated close to Paldiski).

Sweden *: *LuLpm*, *ToLpm* (author's collection).

Norway *: *Fn* (Coll. Tromsø Mus.).

(a) The *vestita* form. The typical *vestita* form may be characterized as being large (length 4—5 mm), generally strongly macropterous, which results in a slender body stature, and with dorsum uniformly covered with rather short, dense and strikingly golden pubescence (fig. 2A). This is *S. vestita* (Dgl.) sensu Wagner 1947, redescribed on material from north west Germany (see above). Specimens of that origin (Hamburg and Hannover region, det. Wagner), as well as Holland (det. Cobben) were available for comparison at this study.

Distribution. A study of the material in coll. ZMH and NRM proves that the typical *vestita* form has a wide Eurosiberian range. In Siberia it has been collected at many localities scattered along the river systems of Lena, Yenisei and Ob. The easternmost records are from the region around the mouth of the tributary Aldan of the Lena system (130° E.). The northernmost records from the three main Siberian river valleys are: Lena (Shigansk) 67° N., Yenisei (Polovinka) approx. 68° N., Ob (Berosov) 64° 30' N. The southeasternmost locality is situated at Verchne Udinsk (Dauria) in Trans-Baikal at about 52° N., 108° E. The most southern localities confirmed in Western Siberia are Krasnojarsk (56° N.) and Tobolsk (58° N.). The Siberian range extends west of the Urals reaching Eastern Fennoscandia and then continues as a southwestern extension covering a narrow zone over the northern part of Central Europe into the British Isles. There are some notable gaps here where the actual occurrence of *vestita* remains to be confirmed, viz. the eastern part of northern Russia as well as Balticum.

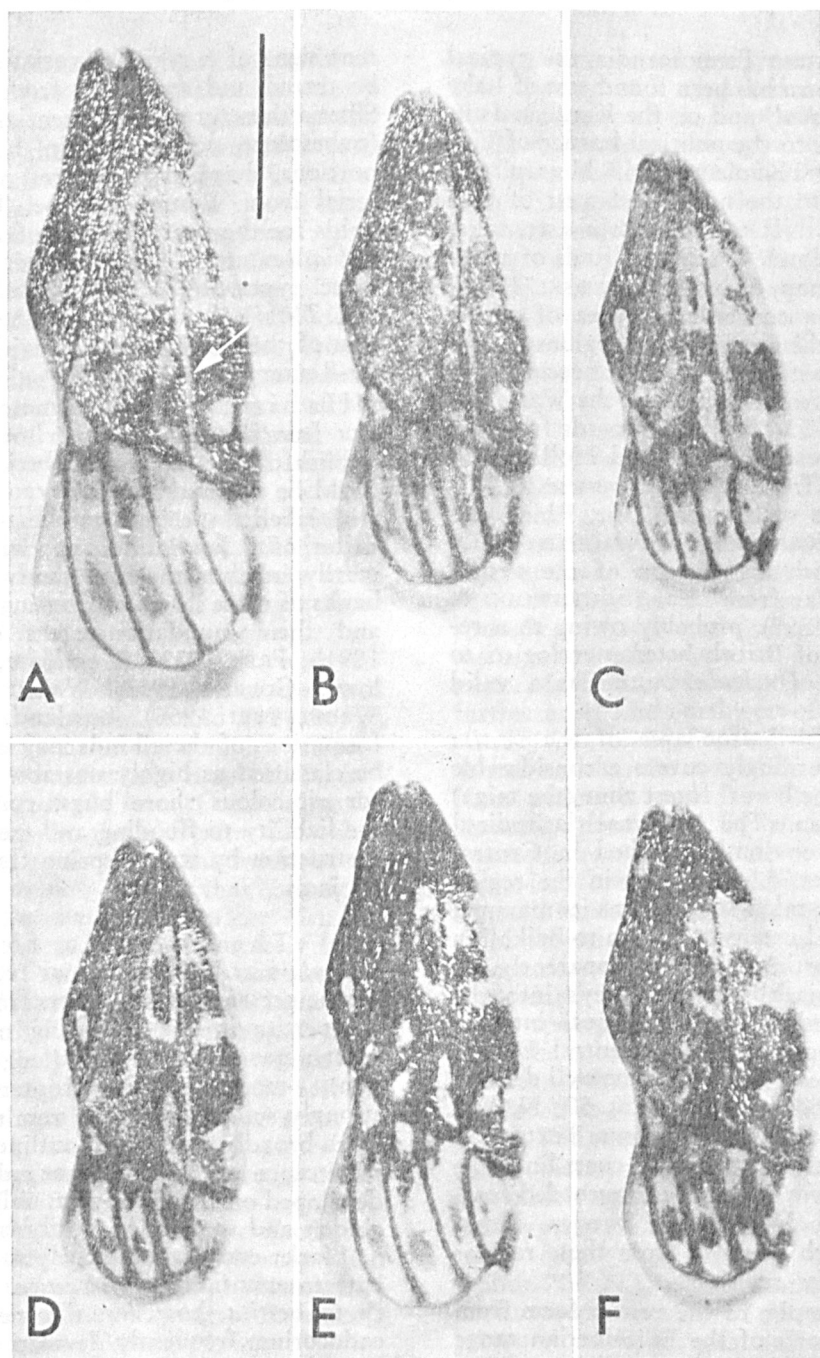


FIG. 2. Hemelytra, females. — A. *Saldula fucicola vestita* (Dgl.) (strongly macropterous), Germany, Hannover reg. (Neu-Darchau). — B. *Saldula fucicola fucicola* (J. Sahlb.) (moderately macropterous), Finland N: Hangö, Täcktom. — C + D. the same (brachypterous), Sweden LuLpm: St. Sjöfaller, Vietas. — E. *Saldula saltatoria* (L.), Sweden Vstml: Linde. — F. *Saldula c-album* (Fieb.), Sweden Vg: Horn.

Scale line = 1 mm. Arrow in A indicates the light zone or streak adjoining the inner margin of exocorium, typical of *S. fucicola-vestita* as mentioned in the text.

In Eastern Fennoscandia the typical *vestita* form has been found east of Lake Ladoga (*Kol*) and on the Karelian Isthmus close to the political border of Finland (*Ike*: Kuolemajärvi, Metsäpirtti), whereas to the north and west of that region a shift to *S. fucicola* s.str. takes place (below). The Polish finds of *vestita* were mapped by WROBLEWSKI (1966), showing a concentrated area of occurrence in the northwestern regions of that country with the majority of records originating from the sides of the Warta River (52—53° N.). The records from the North German Plain and Holland are similarly from the lower courses of larger rivers such as the Elbe, Rhine and Waal (COBBEN 1957, WAGNER 1966). The British distribution of the *vestita* form is far from clear (SOUTHWOOD & LESTON 1959), probably owing to a reluctance of British heteropterologists to accept *S. (fucicola)-vestita* as a valid species.

The distribution area of the *vestita* form accordingly covers a considerable part of the boreal forest zone (the taiga) of Eurasia. The maximal latitudinal range is obviously reached in Central Siberia (ca. 52—67° N.) in the region where the taiga zone attains its maximal southward extension (down to Baikalia). To the north *vestita* may apparently penetrate via the river valleys into the forest tundra belt, to the south into the forest steppe zone. In Central Europe there appears to be a rather well defined southern border around Lat. 52° N. Any tendency towards a northward extension here is interrupted by the coast line. The *vestita* form has not been recorded from Denmark, Norway or Sweden. However, much material from these regions still awaits revision.

The samples of the *vestita* form from various parts of the Eurosiberian range outlined here seem to constitute a taxonomically homogenous unit. No appa-

rent signs of a regional variation could be traced and specimens from Central Siberia thus agree in all essential respects (pubescence, colour pattern, body proportions, shape of parameres) with material from Western Europe. This also holds for the syntypes seen of *Acanthia dubia* Reuter 1884 from Western Siberia (spec. types no 9174, 9175, Sibir. occ., coll. ZMH), thus confirming the correctness of the synonymization with *vestita* by Reuter (1891a).

Habitat. The habitat notes on *vestita* from Europe, together with those published records from Siberia, which could be verified by direct comparison with labelled specimens, indicate its character of a low-land form, which primarily inhabits the bare sandy or silty banks of more slow («depositing») rivers and their inundation areas (REUTER 1891b, FREY 1933 (*S. c-album*, see below), COBBEN 1957, WAGNER 1966, WROBLEWSKI 1966). Lowland riverine formations of these kinds may generally be classified as highly unstable habitats for ripicolous shore bugs, considering the liability to flooding and mechanical destruction by strong spring floods and ice jams.

(b) The *fucicola* form (*S. fucicola* s.str.). This form as recognized by the present author differs from typical *vestita* in the following main respects: generally smaller (length 3—4 mm), moderately macropterous to strongly submacropterous, resulting in a more broadly oval body outline; dorsal pubescence less dense and not uniformly developed on the hemelytra, only partly golden and sometimes mostly brownish or black; eunomy of hemelytral colour pattern essentially as in *vestita*. Contrary to *vestita*, however, the meso- and endocorium frequently develop a strong grayish or pruinose hue. In general aspect *fucicola* sometimes approaches *S.*

c-album, sometimes (darker forms) *S. saltatoria* (see further characters below).

This general characterization partly applies to the nominate form of *S. fucicola* from the White Sea coast, as well as to material from other parts of Fennoscandia, which all taken together represent a wide spectrum of variation in different combinations of characters. These matters will be dealt with more fully and in a quantitative way in the planned forthcoming paper on the *saltatoria* group, where also the question of the systematical relationship between the *fucicola* and *vestita* form will be more definitely evaluated. Here only the main trends will be outlined, without taking up any definite position as to the justification of using subspecific or any other taxonomic categories to separate these forms.

Distribution and variation. With the exception of the finds of typical *vestita* in *Ik* and *Kol* (above), most specimens of the complex encountered in Fennoscandia may be referred to as the *fucicola* form. Considering the occurrence in the different biological provinces given above, the results of the present revision indicate that *S. fucicola* s.str. has a considerably wider distribution in this region than formerly believed (cf. SAHLBERG 1920, LINNAVUORI 1967). Many specimens had been confused with *S. saltatoria* or even *S. pallipes* and *S. opacula* (Zett.). A special interest should be attached to the new records from the southwestern coast of Finland (provinces *Ab*, *N*), as well as the finding at the northern coast of Estonia. The records from the northernmost subalpine and subarctic districts of Sweden and Norway are less surprising, as they represent a natural extension of the previous known range of *S. fucicola* in northeastern Fennoscandia.

A preliminary analysis of the present material of Fennoscandian *fucicola* re-

veals a clear trend towards a decrease in body size and a marked increase in the frequency of brachypterous individuals when approaching the northern subalpine and subarctic parts of the region. Material from the central and northern provinces *Om*, *Ob*, *Kn*, *Ks*, as well as a single female from *Lkem* (Kemijärvi) is throughout composed of strongly to moderately macropterous individuals and several individuals may indeed be classified as transitional between the »typical» *fucicola* and *vestita* form. A sample from *Ks*: Paanajärvi (about 20' south of the Polar Circle) thus agrees with *vestita* as to the large body size and the markedly macropterous condition of the specimens ($n = 12$), but deviates through the non-golden vestiture on the hemelytra and the strongly pruinose and grayish hue of meso- and endocorium in most specimens. Material originating from regions further north and northwest of that area (i.e. *Lt*, *Lps*, *Li*, *Le*, *Fn*, *ToLpm*, *LuLpm*), as well as from the coastal fringes of the Kola peninsula and the White Sea is generally dominated by strongly submacropterous individuals (= truly flight-less forms, cf. *S. palustris* above). There is further a regional preponderance of very dark colour forms here. The simultaneous incidence of brachyptery, dark hemelytra and small size is most strongly manifested in samples from the subalpine regions of the Scandinavian Mts. (*Le*: Kilpisjärvi area / published as *S. saltatoria* by MEINANDER 1972/, *ToLpm*: Abisko, *LuLpm*: St. Sjöfallet, Vietas). The single specimen (male) exhibiting the strongest degree of brachyptery so far encountered originates from *Fn*: Lakselv. Porsanger (about 70° N.), which similarly is the northernmost locality of *S. fucicola* represented in the material at hand. However, a small sample from *Lt*: Nuortijärvi (about 68° 30' N.), i.e. well up in

the subarctic district of Russian Lapland, contains examples of the small brachypterous *fucicola*, as well as one female which may be classified as a typical *vestita* form!

It is true that the present material should allow us to arrange a fairly complete series of transitional forms, which would bridge the phenetic gap existing between the typical *vestita* and the extreme *fucicola* form from subalpine and subarctic districts of Lapland. However, some details in the distribution pattern of the *fucicola-vestita* complex call for further clarification. Thus in order to test the assumption of a graded (clinal) shift from *vestita* to *fucicola* the situation in their possible border areas should be studied. This area from which no material so far has been seen, should comprise the part of Karelia extending from the eastern shore of Lake Ladoga up to the White Sea (Onezhskaya Gulf) and further eastward over northern Russia above the 60th Lat. to the Ural Mts.

Attention must also be drawn to the fact that the few finds of *S. fucicola* s.str. in southern Finland are restricted to the southwestern coastal corner (*N*: Hangö region, *Ab*: Turku area). The record from Estonia close to Paldiski (Baltishport) may be regarded as an extension of this coastal range to the opposite side of the Finnish Gulf. This coastal material represents the typical *fucicola* form (rather small, moderately macroppterous, cf. Fig. 2B). Considering the distribution in Fennoscandia known so far, it would seem that this coastal occurrence is most closely linked to the finds of *S. fucicola* further north at the coastal region of the Gulf of Bothnia (provinces *Ob*, *Om*). The distribution pattern emerging here resembles the situation known in several high boreal or boreo-montane insects in Fennoscandia, which have a more continuous distribution over the northern part of the region, whereas to

the south they become restricted to the coastal fringes. Among the Saldidae, *S. scotica* (Curt.) and *Micracanthia fennica* (Reut.) may be given as fairly representative examples of this situation. In cases like this, the coastal areas are sometimes considered to serve as refugia, which offer special conditions (e.g. correlated with the isostatic raising of new land) allowing the persistence of early post-glacial immigrants in areas well outside their recent main centres of distribution. In addition, the significance of climatic analogies between maritime and high boreal regions (as late cool springs) is generally recognized.

Applying these concepts here, the distribution pattern of *S. fucicola* s.str. may possibly be interpreted so as hinting at a more boreal and specialized character of this form compared with the more meridional and wide ranging *vestita*. If so, it might favour the view of two different subspecies or »ecological races» with separate immigration histories in Eastern Fennoscandia.

There are some published records of *S. fucicola* s.str. from regions well outside Fennoscandia, which I have been able to re-examine. REUTER (1878) listed his own findings of the species from the Orkney and Shetland Islands (Scotland). However, later on when summarizing the distribution of *S. fucicola* he wrote »Brittania (dubiose)» (REUTER 1895:44). The saldid material collected by Reuter in these localities (coll. ZMH) contains a few examples of *S. saltatoria* (a species not mentioned by Reuter 1878), which probably are identical with the specimens determined as *fucicola* by him. Some specimens are somewhat submacropterous with a rather broad body outline thereby mimicing *S. fucicola*. Otherwise the tendency towards wing reduction in *S. saltatoria* is especially apparent in material from high alpine zones of the Alps and to a lesser extent

in the northernmost parts of Fennoscandia.

There is also a record of *S. fucicola* from the southern sector of Western Siberia between Tomsk and Kainsk (leg. Stuxberg) (REUTER 1881:31). One specimen bearing this locality and collector designation was found in coll. NRM. This specimen (female), which is in a perfect state of preservation, may in fact be classified as *S. fucicola* s.str., considering the non-golden dorsal pubescence. It may be considered as a transitory form almost perfectly agreeing with some of the specimens from Kuusamo (Paanajärvi) mentioned earlier. This is so far the only case of a clear transition to the typical *fucicola* form encountered by me in material from the Siberian range of *vestita*.

Recently *S. fucicola* s.str. was recorded from Mongolia (WAGNER 1967). Thanks to the courtesy of Dr. Göllner-Scheiding (Humboldt Museum, DDR Berlin) I have been able to study this material. It thereby turned out that all specimens from the region of Ulan-Bator, contrary to the opinion of WAGNER, must be classified as quite ordinary examples of the wide-ranging *S. saltatoria* (a species not listed by WAGNER 1967). A single female from Egijindava, Aimak Archangaj, collected at water pools on a high mountain steppe (2500 m), is somewhat problematic. It is markedly submacropterous with a strikingly broad body stature. However, considering some details in the hemelytral colour pattern, the relatively short second antennal segment and the high altitude habitat I consider it as an example of the alpine form of *S. saltatoria* mentioned above, which will be discussed in my forthcoming paper on the *saltatoria* group.

In conclusion, the distribution area of *S. fucicola* s.str. confirmed so far extends from northernmost Fennoscandia east-

ward over northern Russia. The situation within the arctic tundra zone east of the Ural Mts. is unknown. The northern border coincides with the coast of the Arctic Ocean. Except for the notable extension along the eastern coast of the Baltic, the southern border runs along the subalpine (Sweden) and the northern parts of the coniferous (taiga) zone (Eastern Fennoscandia).

Habitat Most records of *S. fucicola* s.str. in northern Fennoscandia originate from the margins of mountain streams, rivers and lakes. It seems that this form preferably inhabits bare sandy shore lines (HELLÉN 1932, LINDBERG 1932 fig. 6, and own observations). Data on the habitats of *S. fucicola* were gathered by the author during field surveys within a restricted subalpine area of Swedish Lapland (*LuLpm*: Vietas, St. Sjöfallet). In this region the species primarily occurred as an inhabitant of erosive stream bank formations. Adults and larvae mainly frequent the upper and more stabilized sections of the sandy-stony banks close to the erosion shelf of the adjoining epilittoral zone, being associated with bare or thinly moss-covered sandy soil of a firm consistency and moderate dampness. Locally *Salda* (*Teloleuca*) *bifasciata* (Thomps.) occurred as an associated shore bug species. *S. fucicola* is also known from sea-shore habitats at the White Sea (type localities, see introduction above) and the Baltic Sea. Some specimens from the latter region (*N*: Hangö, Täcktom, Alex. Luther leg.) have been collected on a »shore meadow» according to the specimen label.

An interesting point concerns the ecological affinity to *S. c-album*, which is intimately related to *S. fucicola-vestita* and which is known as a typical inhabitant of stream and river bank formations in the mountain regions of Central Europe and the British highlands. More-

over, *S. c-album* and the *vestita* form have been found side by side at some sites in Scotland (NEWBERY 1902, REUTER 1895). I had the opportunity to study the habitat relations of *S. c-album* on stream and river banks in the Slovak High Tatra Mts. (Carpathians) as well as in the Austrian Alps (North Tirolia). It thereby became evident that the detailed features distinguishing the preferred habitats of this species here essentially corresponded with the situation mentioned above as typical of *S. fucicola* in Swedish Lapland. In other words, these two related species may with some right be regarded as ecological equivalents, in so far as their occurrences in stream bank habitats in Northern Fennoscandia, viz. the Central European mountains are concerned.

A suggestive point in this context concerns the fact that the *fucicola* form from Lapland in its general facies and colour pattern shows some convergent trends toward the *c-album* type. For example, several specimens in my material from LuLpm: Vietas possess a light spot on the proximal part of the clavus, a character frequently occurring in lighter forms of *S. c-album* but only exceptionally recorded in *S. fucicola-vestita* (cf. COBBEN 1960).

In conclusion it may be suggested that the primary habitat zone of the *S. fucicola-vestita* complex comprises the sandy or silty banks of streaming waters within boreal life zones of Eurasia. This characterization should also apply to the allied *S. c-album*, which on the other hand seems to have its distributional foci within more southern mountainous regions (see further below). Regionally these species may successfully exploit other kinds of major habitat formations, as sea shores. In the Alps *S. c-album* ascends into the high alpine zones where it occurs on seepy ground bordering

melting snow (FRANZ 1961, KÜHNELT 1968:713).

Taxonomic characters of the saltatoria group. A reliable identification of the closely related members of this group often requires a good personal experience with these species and their variability. The main problem which may arise when dealing with Fennoscandian material concerns the identification of some forms of *S. fucicola* s.str. and to separate them from *S. saltatoria*. Various structural and biometrical characters were considered by WAGNER (1947) as separating *S. fucicola vestita*, *saltatoria* and *c-album*, whereas *S. fucicola* s.str. was not included in his discussion. In the key by COBBEN (1960) *S. fucicola* seems to have been defined and is figured primarily on the *vestita* form. If his tables are strictly followed, much material of *S. fucicola* from northern Fennoscandia inevitably falls out as *S. saltatoria*. Some discriminating characters are discussed and illustrated below in order to facilitate the identification of these forms and to confirm the true rank of *S. fucicola* s.str. as a good species.

Colour pattern. In many cases a reliable clue to species identity are given by specific differences in the hemelytral colour pattern. Some characteristic features are illustrated by Fig. 2. *S. fucicola-vestita* is generally distinguished by its light to dark brownish appearance and through the tendency to develop more extendent yellowish markings. *S. saltatoria* has typically a darker ground colour, appearing almost black to the naked eye, and with more contrasting light and dark markings. In this species there is further a clear preponderance of forms with reduced light areas of the hemelytra. Further, the light areas are often obscured by a strongly grayish or pruinose hue extending over meso- and endocorium (see further COBBEN

1960). However, in contrast to the statement by COBBEN (1960), this latter feature also appears regularly in some forms of *S. fucicola* s.str., notably in populations from subarctic and subalpine regions (see above). This frequently results in a very close resemblance to *S. saltatoria*. However, there is minor detail in the colour pattern differing between these species and which has proved to permit a reliable identification in the majority of such critical cases. In lighter forms of *S. fucicola-vestita* (Fig. 2C) the anterior light area of exocorium is continuous with the distal area along the inner margin of exocorium. In darker forms this connexion mostly persists as a narrow and well demarcated light zone or streak extending forwards along the M+R ridge from the light spot at the inner distal corner of exocorium. (Fig. 2B, D). This light streak has been indicated with an arrow on the *vestita* wing in 2A. In darker, as well as most light forms of *S. saltatoria* (and *c-album*), on the other hand, the central dark area of exocorium generally extends right to the R+M ridge delimiting exocorium, thus leaving an isolated distal light spot lacking a forward extension (Fig. 2E). In some high boreal populations of *S. fucicola* s.str. the light streak may be somewhat obscured by a grayish or frosty hue (especially in hibernated individuals), but its presence is still clearly discernable.

Dorsal pubescence. The dense golden pubescence mentioned as a primary feature of the typical *vestita* form is very conspicuous when observed in a strong light source directed from the front as shown in Fig. 2A. In *S. fucicola* s.str. the pubescence tends to be reduced and become more irregularly distributed on the hemelytra and is further largely brownish or black as in *S. saltatoria*. Whereas in *vestita* the dense pubescence extends over the distal area of the clavus

surrounding the light spot, the same area is partly bald in *fucicola* s.str. and *S. saltatoria*. However, in *S. saltatoria* this bare area is in typical cases more extended and more sharply demarcated from the rest of the clavus, which is scantily covered with golden hairs. In addition, the colour of this area is generally more deep velvety black in this species. These differences may partly be seen in Fig. 2.

Genital structures. The male parameres of the species of the *saltatoria* group treated in this paper are illustrated in Fig. 3. As often is the case among related species of Saldidae, these structures display a high degree of uniformity and the main discriminatory features are related to their size and general shape. My observations given below partly agree with WAGNER (1947). However, the drawings provided by that author are hardly of a kind suited for critical determination work, although several of his observations remain essentially valid.

The differentiating characters of the parameres may be defined as follows. Abbreviations: c.par. = corpus parameri, p. sens. = processus sensus, p. ham. = processus hamatus (cf. COBBEN 1960).

S. fucicola-vestita (Fig. 3A—C). Parameres long (cf. scale line) and of a slender and fairly straight outline. Outer side (= left in the figure) of c.par. with a weak curvature, partly almost straight, proximally at the junction with the shaft markedly inflexed. C.par. moderately sclerotized.

(Origin of material examined: Fennoscandia, Siberia, Holland, N W Germany.)

S. c-album (Fig. 3D). Resembling the preceding forms. Parameres somewhat shorter and of a less slender appearance. P.ham. generally broader. P.sens. more prominent and with longer hairs. Sclerotization as in *S. fucicola-vestita*.

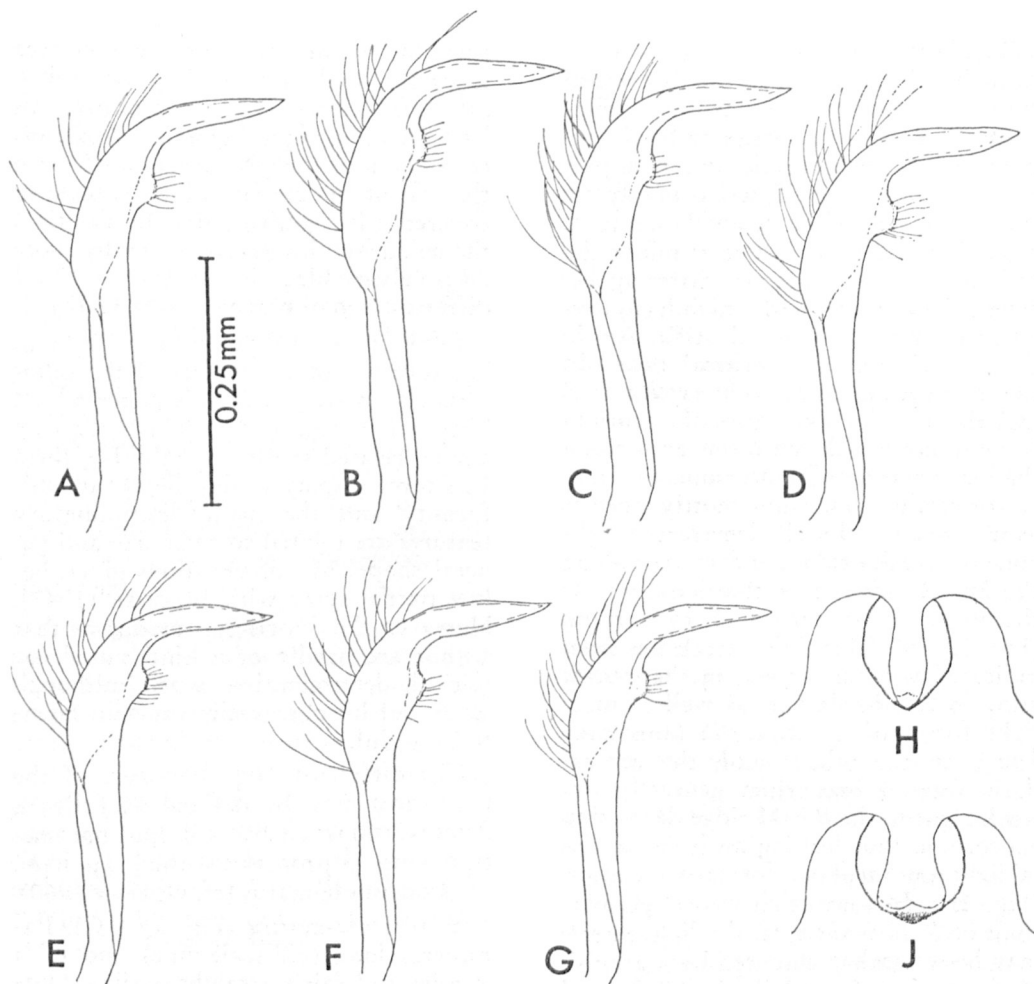


FIG. 3. A—G, right paramere, front view; H + J, parandria, hind view. — A. *Saldula fucicola fucicola* (J. Sahlb.), Sweden *LuLpm*: St. Sjöfallet, Vietas. — B. *Saldula fucicola vestita* (Dgl.), Siberia, reg. Obensis, Kalimsky. — C. the same, Holland, O. Flevoland. — D. *Saldula c-album* (Fieb.), Sweden Vg: Horn. — E + F. *Saldula saltatoria* (L.), Sweden Öl: Ekerum. — G. the same Slovakia bor., High Tatra Mts., Skalnaté pleso. — H. *Saldula c-album* (Fieb.), Sweden Vg: Horn. — J. *Saldula fucicola vestita* (Dgl.), Siberia, reg. Obensis, Artamonovoi.

(Origin of material examined: Sweden, Scotland, ČSSR / Slovakia bor. /).

S. saltatoria (Fig. 3E—G). Parameres clearly and consistently shorter and more strongly curved compared with *fucicola-vestita* (cf. scale line). General outline rather variable. Outer side of c.par. mostly with a strong and even curvature, at the base quite smoothly tapering

off into the shaft. Specimens with the outer and inner sides of c.par. markedly convergent towards the base (Fig. 3F) not uncommon. Proc. sens. not prominent. C.par. more strongly sclerotized than the other species.

(Origin of material examined: Fennoscandia, Austria (Alps reg.), ČSSR / Slovakia bor. /, Mongolia).

(Note: WAGNER (1947) depicted the paramere of *S. saltatoria* as possessing an additional tooth-like projection on its inner side. However, as already pointed out by COBBEN (1959:308), this evidently represents a quite accidental and abnormal situation and no such specimen has been encountered by me either).

A study of the so-termed parandrial appendages of the male genital segment in the *saltatoria* group shows that the various characters furnished by these structures only allow us to differentiate between two groups of species here, viz. *S. c-album* having parandria proximally separated by a narrow gap, and *S. saltatoria*, *fucicola-vestita* (and *S. melanoscela* (Fieb.)) distinguished by more widely separated parandria. These latter species are hardly separable *inter se* (except for *melanoscela* distinguished by shorter parandria).

This situation is illustrated in Fig. 3 H, J. In *S. c-album* the distance at the base equals about one-third of the base width of one appendage, in *S. fucicola-vestita* and the other species mentioned it equals two-thirds or more of its width.

S. c-album is readily separated from its relatives by easily observed characters. The strongly broad and roundish body outline and the large conspicuous and very rarely reduced light c-shaped spot of exocorium are distinctive (cf. Fig. 2F). Some light-coloured and submacropterous specimens of *S. fucicola* (especially males) from northern Fennoscandia sometimes attain a superficial resemblance with *S. c-album* and have probably been mistaken for that species in the literature (see below). However, these forms are never as broadly oval as *c-album*. Moreover, *S. c-album* differs from *S. fucicola-vestita* in the same way as *S. saltatoria* with respect to the colour pattern of exocorium mentioned above. However, in doubtful cases the easily

checked differences in the configuration of the male parandria described here provide a clue to species identity.

Larval characters. Larvae of *S. fucicola* s.str. and *S. saltatoria* may be separated from each other, at least in their last instars. A study of field captured as well as laboratory reared material of these species showed that the numerous setae, which are distributed over the body surface are constantly longer in the larvae of *S. fucicola*. This is illustrated in Fig. 4, showing the situation in laboratory reared L₅ of these species. The differences are especially apparent in case of the marginal setae as shown in the figure. These are clearly longer and somewhat more deflected and slightly erect in the larvae of *S. fucicola*. Unfortunately no material of the *vestita* form was available for comparison.

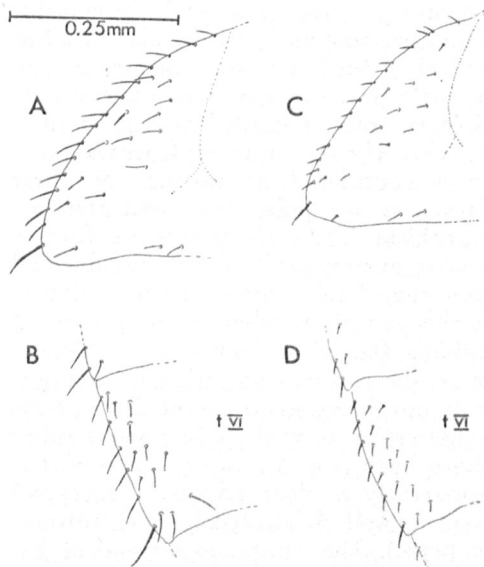


FIG. 4. Differences in the length of setae of fifth instar larvae of *Saldula fucicola fucicola* (J. Sahlb.) and *S. saltatoria* (L.). Drawn from dry exuvia. — A + C, side of pronotum; B + D, part of abdominal margin. — A + B. *S. fucicola*, Sweden LuLpm: St. Sjöfallet, Vietas. — C + D. *S. saltatoria* Sweden Upl: Vaddö, Byholma. t = tergite.

Concluding remarks. The results of the present study have clearly confirmed the rank of *S. fucicola* (J. Sahlb.) as a valid species. It differs from *S. saltatoria* with which it has sometimes been synonymized in imaginal as well as larval characters. Both species have further been found together without exhibiting any signs of morphological intergradation. COBBEN (1960) was accordingly right in re-introducing *S. fucicola* as the name of a good species in STICHEL's »Wanzentabellen». Considering the different opinions cited earlier as to the systematic relationships between *S. fucicola* and *S. vestita* (Dgl.), the present author is inclined to subscribe to COBBEN's (1960) conception of their conspecific character. Some information supporting such an opinion has been delivered in this paper. Both forms essentially agree as to their hemelytral colour pattern and its eunomic variation and they further possess the same type of male parameres. It was further possible to trace a graded transition of a possibly clinal nature in features generally considered as distinct of these forms, as size, pubescence, and pterygomorphism. These characters are further known as very labile and to be subjected to a considerable intraspecific variation in this as well as other species groups of *Saldula* (see also COBBEN 1959). Moreover, the regional variation in pterygopolymorphism so apparent in *S. fucicola-vestita* as well as in several other shore bugs (e.g. *S. palustris* above) has apparently a clear adaptive (ecotypic) basis as will be elaborated later (LINDSKOG in prep.). The conspicuous trend of zonal-geographic variation in size and wing development established for *S. fucicola-vestita* seems to be repeated by *S. saltatoria* within the Alps region, as will also be shown elsewhere. In this case however, the shift from a large macropterous to a small and predominantly

brachypterous form is manifested as an altitudinal phenomenon.

As pointed out earlier, there are some features in the distributional relationships of *S. fucicola-vestita* awaiting a further elucidation. Until then any introduction of infraspecific categories here seems unwise. It is on the other hand desirable that the identity of the structurally and chorologically well circumscribed *vestita* form versus the more variable high boreal *fucicola* form should be expressed in the nomenclature applied when referring to this complex. This may accordingly be done by referring to *S. fucicola* s.str. versus *S. fucicola vestita*.

Finally a question of considerable interest may be raised here starting from the following premises. *S. fucicola* is evidently an eastern immigrant in Fennoscandia, which has successfully invaded the northernmost subalpine and subarctic districts here. The northwesternmost populations (Swedish Lapland and the Finnmark (Norway)) might be reckoned as the extreme stages of a clinal trend involving an adaptive adjustment to increasingly more boreal environments. (Note! unpublished results from laboratory rearings indicate that the morphological features distinguishing the Lapland form / small size, brachypterism / are the result of a genetical adjustment and not a mere environmental modification). Hitherto no records of *S. fucicola* are known in Sweden or Norway beyond the subalpine and subarctic districts there. The question which now may arise is whether such a high degree of specialization might have been attained by these high boreal populations of *S. fucicola* that the reverse process of adjustment, involving a southern spread down on the Scandinavian Peninsula is biologically impossible or seriously impeded. There are some interesting ecological and evolutionary

implications here, which make a more detailed study of these matters well warranted. A primary task must of course be to investigate the distribution of *S. fucicola* in northern Scandinavia in more detail.

S. c-album (Fieber) 1859

Some comments should be given on this species here as it has partly been subjected to a joint treatment with the preceding forms in the literature. This is mainly due to the former belief that *S. vestita* was the macropterous form of *S. c-album* (see above). This confusion especially applies to Siberian records of *S. c-album*. There are further some interesting points relating to the systematic and distributional relationships between these species, which merit some attention.

Distribution. A study of coll. ZMH and the literature indicates that authentic records of *S. c-album* in Eastern Fennoscandia are restricted to southern Karelia (USSR), viz. the Karelian Isthmus (*Ik*) (several localities) and the region between the lakes Ladoga and Onega around the river Svir (*Kol*). The northern limit appears to be around 60° 30' N. (see further SAHLBERG 1920, LINNAVUORI 1967). It is known here from sandy river banks, which are said to be frequently developed in this region (as along the river Svir). There is further an overlap in range with the allied and similarly mainly riverine and ripicolous *S. fuc. vestita* in this region (cf. above). However, no authentic records indicating a direct co-occurrence of the two species here have so far been traced. *S. c-album* was recorded from Metsäpirtti (*Ik*) by FREY (1933), a locality where *vestita* has been found by other collectors. However, the single specimen from this locality, leg. Frey, placed under the name of *S. c-album* in ZMH proved to be a *vestita* too.

The records of *S. c-album* in Sweden well conform to the meridional range observed in Eastern Fennoscandia. The species is known here from scattered localities in the provinces *Sk*, *Sm*, *Vg*, *Boh*, and *Dlr*, which means a southwestern type of distribution. The northernmost locality (*Dlr*: Solvarbo) in Sweden happens to be situated at virtually the same latitude as the northern limit noted above in Karelia. In addition, there are some very doubtful isolated records of the species from the northernmost subalpine and subarctic districts in Scandinavia, which to be sure have been published as *S. ? c-album* (sic!), viz. Sweden, Abisko (*ToLpm*) (JENSEN-HAARUP & LINDBERG 1931) and Norway, Finmark (Reuter det.) (WARLOE 1921). Considering the otherwise clear-cut southern range of *S. c-album* in Fennoscandia and further the alleged uncertainty of the determinations, one may be fairly confident that these findings refer to other species and then most likely to *S. fucicola*, which is known to occur in these areas. As noted earlier, this species may sometimes develop a superficial resemblance with *c-album*. For the same reasons the records of *S. c-album* from subarctic regions of north-east Russia (Malozemel'skaya tundra) mentioned by KIRITSHENKO (1960) may be questioned.

Further south, in Central Europe, the character of *S. c-album* as a predominantly montane species becomes increasingly more apparent. The main bulk of records of the species in Poland are from the southern mountain ranges (especially the Sudetes and Tatra). Only a few scattered findings from lowland regions are known here (WRÓBLEWSKI 1966:Map 6.). It may further be gathered from a study of the faunistic literature that *S. c-album* is similarly only appearing sporadically and in scattered localities within the North German Plain and in Holland. On the other

hand, it is widely distributed and locally common on stream and river banks in upland as well as lowland areas in Northern England and Scotland (cf. SOUTHWOOD & LESTON 1959). *S. c-album* is further a very common and widely distributed species within the Alps region. As mentioned earlier, sandy-stony banks of streams and rivers obviously constitute its primary habitats here. In addition, it frequently appears in other types of habitats in these mountain regions, as margins of small temporary water bodies, on damp fresh soils of periodically water-logged ground and further in the high alpine zones at the margins of melting snow on seepy ground (e.g. FRANZ 1961, HEISS 1972, KÜHNELT 1968, and own observations).

S. c-album is also recorded from Siberia, the mountainous regions of Central Asia, as well as Alaska, Canada and some parts of the northwestern United States down to Colorado (COBBEN 1960, DRAKE & HOBERLANDT 1959). There are several obscure records or otherwise unclear taxonomic details involved here, however, which cast some doubt on the reality of this seemingly continuous hol-arctic range of *S. c-album*. In the case of earlier published records of *S. c-album* from Siberia, which hitherto could be checked by me on authentic specimens (coll. ZMH), these have invariably belonged to other species, mostly *S. fuc. vestita* (REUTER 1891b, LINDBERG 1921, 1928). This confusion is well illustrated in the material treated by LINDBERG (1928) from the Lena Valley. The specimens published as *S. c-album* by that author instead turned out to be composed by *S. fuc. vestita* as well as *S. melanoscela* (Fieb.)! This latter species was represented by more submacropterous and consequently more broadly oval specimens than usually seen in European material, which results in a deceptive resemblance to *c-album*. In addition, the

record of *S. saltatoria* from Olekminsk (LINDBERG 1928) actually refers to *S. fuc. vestita*. It may be that *S. c-album* is widely distributed in Siberia. However, this has to be verified through a revision of older records.

At my request, Mr. John Polhemus (Englewood, Colo., USA), the foremost expert on Nearctic shore bugs, kindly sent me a sample determined by him as *S. c-album* from state Washington (Iron Springs), USA. A preliminary investigation shows that this form deviates in several respects from the European *c-album* and their conspecific status may be seriously questioned. In some respects the New World form actually takes an intermediary position between *S. c-album* and *S. fucicola* s.str. as will be shown at a later occasion. At present one should thus be reluctant in accepting the occurrence of *S. c-album* in North America.

Regarding the distribution pattern of *S. c-album* in Europe as outlined above, it would seem that the principal distributional foci of this species coincide with the central mountainous region of the continent, viz. the Alps, the Carpathians and adjoining systems. Seemingly reliable records also exist from the mountain regions of Central Asia as the Tadzhik SSR (KIRITSHENKO 1964) and Mongolia (HOBERLANDT 1971a, b).

It was earlier claimed that *S. c-album* in ecological respects might be conceived of as a southern montane equivalent to the high boreal *S. fucicola* s.str. In the pattern of zonal-geographic displacement of these allied forms, *S. fuc. vestita* apparently occupies an intermediate position in its character of a low-land form inhabiting riverine littoral formations within the more central parts of the temperate forest zone. To the north this form is replaced by *S. fucicola* s.str., here assumed to represent a more cold-adapted, conspecific differentiate with a

clinal intergradation, and to the south by *S. c-album* which accordingly may be assigned as a closely allied and primarily montane species. The border line in Central Europe, where the allopatric range of *S. c-album* merges into sympatry with *S. fuc. vestita*, seems to be situated around Lat. 52° N. North of this line there is the narrow lowland zone stretching from Poland to Holland in the west where *S. fuc. vestita* extends on a narrow front over Central Europe and where both species occur (see above). This area of sympatry extends into Britain as well as into Eastern Fennoscandia. A notable point is that the northern limits of these two forms seem to coincide rather closely in Eastern Fennoscandia (southern Karelia), as is clear from the previous accounts.

One may conclude from structural as well as ecological and biogeographic relationships that *S. c-album* is closely related to the *fucicola* complex. It may be tentatively suggested that *S. c-album* originally was differentiated as a specialized montane segregate of an Eurasiatic low-land form, which may have been very close to *S. fuc. vestita*.

Chartoscirta cocksi (Curtis) 1835

There seems to be no previous record of this species from Eastern Fennoscandia judging from SAHLBERG (1920) and LINNAVUORI (1967). However, one single specimen was encountered at an inspection of the material of *C. elegantula* (Fall.) in coll. ZMH. It had been collected on the Karelian Isthmus within a former Finnish territory (now USSR).

C. cocksi is immediately separated from the allied *elegantula* through its swollen and invariably black, last antennal segment.

The abovementioned locality is situated close to the coast at the innermost part of the Finnish Gulf. There seems to be a good chance that the species will

prove to occur also at the Finnish side of the Gulf. *C. cocksi* is locally common in southern Sweden with the northernmost localities in the province Ög (around 58° N). As with the related *C. elegantula*, this shore bug is associated with more permanent habitats of the hygric succession, as wet swampy meadows and *Sphagnum* bogs and tends to keep close to the vegetative cover.

Ik: Terijoki 22. 8. 1934 1 ♀ (P. H. Lindberg leg.) (ex coll. Håk. Lindberg).

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Dermaptera from the Sudan

(Zoological contribution from the Finnish expeditions to the Sudan no. 36)

A. Brindle

Abstract

BRINDLE, A.: Dermaptera from the Sudan. — Notulae Entomol. 54:57—59. 1974.

A list is given of finds of 213 exx. representing 8 species collected by the Finnish zoological expeditions to the Sudan. *Diaperasticus sansibaricus* and *Spongovostox tripunctatus* are recorded from the Sudan for the first time.

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Through the kindness of Dr. Martin Meinander of the Zoological Museum in Helsingfors, I have been able to examine a series of 213 specimens of Dermaptera collected during the Finnish Expeditions to the Sudan in 1962—1963. The Dermaptera fauna of Africa is richest in the equatorial zone, and becomes much poorer to the north and to the south. The interest of the Sudan lies in its position in the transition area where the rich equatorial fauna gives way to the poorer northern fauna, and it also forms a connection between the Ethiopian fauna and that of the Mediterranean coast of Africa. The eastern part of the Sudan has principally Middle Eastern species.

Of the eight species represented in the present collection, three are part of the Mediterranean fauna and are also widely distributed in Africa south of the Sahara; one species is found in the Middle East and extends down along the eastern coast of Africa; whilst four species are Ethiopian species proper.

Although most of the species are recorded from the Sudan in BRINDLE (in press), there are two new records — *Diaperasticus sansibaricus* (Karsch), and *Spongovostox tripunctatus* (Borelli). A number of localities are also new and are most useful in defining the distribution of the species more adequately.

A number of the specimens have been taken at light, and this method of collecting appears to be useful; most species of Dermaptera are nocturnal and many appear to be strongly attracted to light. Acknowledgements should also be given to the collectors, who have by their efforts added to our knowledge of the Dermaptera of the Sudan.

Labiduridae

Labidurinae

Lapidura riparia (Pallas)

Forficula riparia PALLAS 1773, Reise Russ. Reichs. 2:727.

Labidura riparia (Pallas) BURR 1911, Genera Insectorum 122:36.

This is a cosmopolitan species, world-wide in distribution, although its main centre may be Central Asia. It is recorded throughout Africa, and some variation in colour and minor structural features occur. The present specimens are of the rather dark form, mainly blackish-brown with the sutures and lateral margins of the elytra and wings narrowly yellow; the forceps are partially yellow and one male has the last tergite also yellow. The species appears to be most common in dry sandy places or along the sandy margins of rivers and lakes.

Material: 3 ♂, 4 ♀, Kosti, 22. I. 1963 (ad lucem) (Linnavuori); 6 ♂, 8 ♀, 8 larvae, Wadi Halfa, 13—17. X. 1962 (Linnavuori), 28. III. 1964 (Meinander), 9—13. IV. 1964 (Meinander and Kaisila); 1 ♀, Erkowit, 19. IV. 1964 (Kaisila); 2 ♂, 3 ♀, Upper Nile, Malakal, 5—20. I. 1963 (Linnavuori).

Nala lividipes (Dufour)

Forficula lividipes DUFOUR 1828, Annls Sci. nat. 13:340.

Nala lividipes (Dufour) BURR 1911, General Insectorum 122:36.

The world distribution of this species extends from Southern Europe and North Africa through Asia as far east as China and Japan, and south-eastwards to Australia. In Africa, south of the Sahara, it is common, but mainly eastern, extending south to the Cape. All the present specimens are dark and fully winged, the male forceps showing some variation in curvature and in thickness of the branches.

Material: 2 ♂, Kosti, 22. I. 1963 (Linnavuori); 2 ♀, Dahr el Ghazal Wau, 19. II. 1963 (Linnavuori); 1 ♂, Kordofan, El Obeid, 29. I. 1963 (ad lucem) (Linnavuori). 4 ♂, 5 ♀, Blue Nile — Sanga-Damazini, 15—17. II. 1962, Wad Medani, 11—14. II. 1962 (ad lucem), Umm Banein, 14. II. 1962 (Linnavuori).

Labiidae

Labiinae

Labia minor (Linnaeus)

Forficula minor LINNAEUS 1758, Syst. nat. 1:423.

Labia minor (Linnaeus) BURR 1911, Genera Insectorum 122:55.

Although basically Palaearctic, this species is now found in all faunal Regions; it occurs throughout Africa, where most specimens differ from the northern form in having a yellow pronotum.

Material: 1 ♂, Kordofan, Lake Keilak, 8—11. II. 1963; 1 ♂, Upper Nile, Malakal, 5—20. I. 1963 (Linnavuori).

Spongophorinae

Spongovostox tripunctatus (Borelli)

Spongiphora tripunctata BORELLI 1907, Annali Mus. civ. Stor. nat. Giacoma Doria 43:367.

Labia tripunctata (Borelli) BURR 1911, Genera Insectorum 122:56.

Spongovostox tripunctatus (Borelli) BORELLI 1923, Rev. Zool. Afr. 11:418.

This is confined to Africa, south of the Sahara, and has previously been recorded from the Ivory Coast, Cameroun, Gabon, Congo Republic, Congo, Angola, and Uganda, and is thus mainly central. The present record extends its known distribution considerably.

Material: 1 ♂, Equatoria, Lotti Forest, 14—17. III. 1963 (Linnavuori).

Forficulidae

Forficulinae

Forficula lucasi Dohrn

Forficula lucasi DOHRN 1864, Stettin. ent. Ztg. 26:98.

Forficula lucasi Dohrn BURR 1911, Genera Insectorum 122:81.

This species is mainly North African and Middle Eastern but it does extend

to the eastern Sudan, where it is evidently common, and along the east coast of Africa as far south as Tanzania. The male forceps of the present specimens show considerable variation in length, ranging in size from 4 mm (body length 11 mm) to 9 mm (body length 15 mm). The flattened basal part of the male forceps is usually about half the length of the whole branch, but rather less in proportion in the larger specimens; in these latter specimens the curvature of the distal cylindrical part of each branch is less than in the smaller specimens in which the distal part of the branch is more strongly curved. The species is a robust one, rather distinctive in colouration, although similar yellow-spotted elytra also occur in some other Palaearctic species. There is little variation in colour amongst the present specimens.

Material: 65 ♂, 39 ♀, Erkowit, East Sudan, 29. X. 1962 (Panelius), 17—20. IV. 1964 (Meinander and Kaisila).

Forficula brolemanni Borelli

Forficula brolemanni (BORELLI 1907, Boll. Musei Zool. Anat. comp. R. Univ. Torino 22(No. 573):1.

Forficula brolemanni Borelli BURR 1911, Genera Insectorum 122:81.

This species, originally described from the Sudan, has not often been subsequently recorded. This appears to be due to the fact that the species is local, occurring along the Congo-Sudan border and in Uganda. It is, however, very common in the Garamba Park of the Congo, near to the Sudan border, where it may have its main centre. As in *lucasi*, the male forceps show considerable variation in length, varying from 4—10 mm., with a body length of between 9—11 mm. The present specimens are almost uniformly yellowish in colour and the forceps of the male are of an intermediate length.

Material: 1 ♂, Blue Nile, Ingessana mts., 17—22. II. 1962; 1 ♀, Blue Nile, Umm Barein, 14. II. 1962 (Linnavuori).

Diaperasticinae

Diaperasticus erythrocephalus (Olivier)

Forficula erythrocephalus OLIVIER 1791, Encycl. Method. 6:468.

Diaperasticus erythrocephalus (Olivier) BURR 1911, Genera Insectorum 122:96.

This species is confined to Africa south of the Sahara, together with Madagascar: it occurs through these areas but the Sudan is its northern limit. The present specimens are fully winged and of the normal variegated colouration.

Material: 4 ♂, 1 ♀, Upper Nile, Malakal, 5—20. I. 1963 (Linnavuori).

Diaperasticus sansibaricus (Karsch)
Sphingolabis sansibarica KARSCH 1886, Berl. ent. Z. 30:90.

Diaperasticus sansibaricus (Karsch) BURR 1911, Genera Insectorum 122:96.

This species is confined to Africa, south of the Sahara, and has not been previously recorded from the Sudan. It is known to occur mainly in the eastern half of Africa from the Sudan and Ethiopia southwards to the Cape, and extending westwards into Angola. The present records extend its known distribution northwards from the Congo, and probably represent its northern limit in Africa.

Material: 1 ♂, 2 ♀, Upper Nile, Malakal, 5—20. I. 1963 (Linnavuori); 1 ♂, Wadi Halfa, 10. IV. 1964 (Kaisila).

Reference

BRINDLE, A. (in press) The Dermaptera of Africa, Part 1. — Ann. Mus. R. Afr. Centrale.

Coniopterygidae from Madagascar (Neuroptera)

Martin Meinander

Abstract

MEINANDER, MARTIN: Coniopterygidae from Madagascar (Neuroptera). — Notulae Entomol. 54:60—63, 1974.

Two species are recorded from Madagascar, *Coniopteryx* (C.) *madagascariensis* sp.n. and *Semidalis mascarencia* Fraser, 1952 (*S. limbalis* Fraser, 1955 syn.n.). The wing colour in *S. mascarencia* varies greatly.

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The only records of Coniopterygidae from Madagascar so far are by FRAZER (1952 and 1955), who very briefly described two new species of *Semidalis*, *S. mascarenica* and *S. limbalis*. These species are probably synonymous and thus only one species has hitherto been recorded from there. The present material, collected by Dr. Stuckenberg and kindly placed at my disposal by Dr. Tjeder, contains 25 specimens including the above-mentioned species and a new species of *Coniopteryx*, thus raising the number of known species to two.

Coniopteryx (*Coniopteryx*) *madagascariensis* Meinander, sp.n.

Fig. 1.

Type: ♂ holotype; Madagascar-Centre; Museum National d'Histoire Naturelle, Paris.

Head yellowish white except clypeus and genae, which are brown. Antennae of male 28-segmented. Scape yellow, pedicel and flagellum greyish brown. Scale-like hairs present on entire pedicel and as a thick whorl at apices of flagellar segments. Flagellar segments about one and a half times as broad as long, with one almost straight seta, which is about as long as the segment is broad (Fig. 1F). Antennae of female 26—30-segmented, entirely greyish brown. Flagellar segments about as long as broad or slightly longer. Setae about as long as length of segment. Palpi greyish brown.

Thorax yellowish white with blackish shoulder spots. Membrane of wings light greyish brown. Length of fore wing 2.2 mm, of hind wing 1.8 mm.

Male genitalia, Figs. 1A—E. Hypandrium in lateral view slightly higher than broad. Apodeme ventrally continuous along anterior margin. Processus terminales in lateral view long and acute; in ventral view they together form a bilobed plate, which continues medially dorsad. This dorsal projection is connected with the lateral parts of the hypandrium by a transverse membrane, thus forming a peculiar structure which is not found in any other species described. Median apical incision shallow and rounded. Processus laterales rather prominent. Styli basally bifurcate, inner branches connected to parameres at a rather distal point. Parameres without processus ventralis. Processus apicales rather prominent and distally curved inwards in caudal view. Penis sclerotized, consisting of two parallel rods.

Female genitalia, Figs. 1G—H. Eighth segment synscleritous, eighth sternite large and retrorse. Dorsally a transverse line of about ten large setae, ventrally several scattered retrorse setae. Ninth tergite with darkly pigmented lower ends and proximal border, ectoprocts weak and unpigmented, with several large setae. Tenth sternite forming an unsclerotized transverse plate below

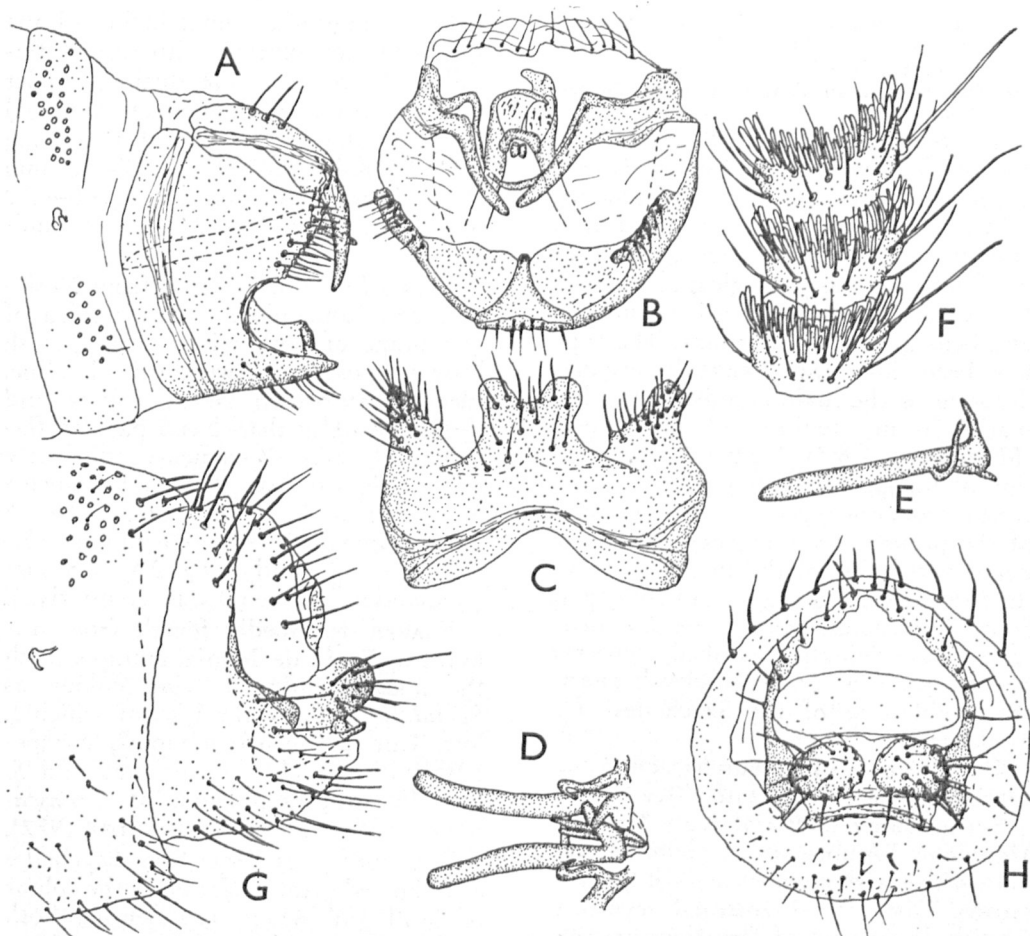


FIG. 1. *Coniopteryx madagascariensis*. A. male terminal abdominal segments, lateral view, B. ditto, caudal view, C. male hypandrium, ventral view, D. parameres, penis and parts of styli, dorsal view, E. ditto, lateral view, F. male antennal segments 8—10, G. female terminal abdominal segments, lateral view, H. ditto, caudal view.

anus. Gonapophyses laterales well sclerotized, brown and connected by an unsclerotized membrane, which is folded ventrally and directed backwards, in lateral view looking like a separate small plate below the gonapophyses laterales. Bursa copulatrix rather large (marked by a line of short dashes in Fig. 1G).

Present material: Madagascar-Centre, Plateau Soaindrana, 2060 m, 1958-01-14—17, ♂ holotype (deposited in Paris Museum); Pic Boby,

2400 m, 1958-01-11—14, 1 ♀; Rivière Zomandoa, 1650 m, 1958-01-10, 1 ♀; Madagascar Sud, Route d'Anosibe dct Moranga, 840 m, 1957-12-18—21, 1 ♀.

Semidalis mascarenica Fraser, 1952

Semidalis mascarenica FRAZER, 1952:141, f. 4 (description); MEINANDER, 1972:338, f. 221 (description of male genitalia, distribution). (Type: Madagascar lost.)

Semidalis limbalis FRAZER, 1955:127, f. 1 (description); MEINANDER, 1972:311 (listed).

(Type: Madagascar, lost.) New synonym.

Semidalis nigrivena FRAZER, 1957:22 (description). (Type: Réunion, lost).

Semidalis mascarensis FRAZER, 1957:22. Nomen nudum.

The present material includes 21 specimens of *Semidalis*, of which 10 are males. The specimens from different localities vary greatly in both dimensions and colour characters, but as I have not found any morphological differences I assume that they are all conspecific and belong to *S. mascarenica*. The type has been lost and FRAZER's original drawing of the male parameres is schematic. In my revision of the family (MEINANDER 1972), I gave a redescription of the genitalia based on some specimens from the Seychelles. The genitalia of the present specimens agree in every detail with those of the specimens from the Seychelles, and the present collection from Madagascar, from where *S. mascarenica* was originally described, confirms my exception of conspecificity between the populations of the Seychelles and Madagascar.

On the basis of colour characters the species can be divided into three forms:

Forma *fusca*. Material from Lokobe, Montagne d'Ambre and Ambohitantely. Both wings with membrane dark greyish brown. Distal 8—9 antennal segments whitish, basal part of flagellum greyish brown. Head blackish brown or brown. Scape greyish (Lokobe), almost concolorous with rest of antenna, or yellow (Montagne d'Arbe, Ambohitantely), distinctly paler than rest of antenna. Antennal segments 30—40 (Lokobe), 34—38 (other). Length of fore wing 2.0—2.1 mm (Lokobe), 2.6—3.2 mm (other) and of hind wing 1.6 mm (Lokobe), 2.0—2.6 mm (other).

Forma *alba*. Material from Nosiarivo and Soiandranana. Both wings with membrane unicolorous, almost hyaline. Head light brown. Distal 6—9 antennal segments in Nosiarivo specimens slightly

paler than rest of antennae, in Soiandranana specimens concolorous with rest of flagellum. Scape very pale, distinctly paler than greyish brown antennae. Antennal segments 36—44. Length of fore wing 3.2—3.6 mm (Nosiarivo), 2.8—3.1 mm (Soiandranana) and of hind wing 2.6—3.0 mm (Nosiarivo), 2.2—2.4 mm (Soiandranana).

Forma *limbalis*. Material from Nosiarivo and Zomandoa. Anterior third of membrane of both wings dark greyish brown, posterior two-thirds hyaline. Head light brown. Scape yellow and distinctly paler than basal part of flagellum, distal 6—7 segments indistinctly paler than the rest. Antennal segments 39—44. Length of fore wing 3.0—3.4 mm (Zomandoa), 3.7—3.8 mm (Nosiarivo) and of hind wing 2.4—2.8 mm (Zomandoa), 2.9—3.0 mm (Nosiarivo).

FRAZER described a female from Ankaratra, Forêt de Manjakatampo, with the above-mentioned wing colour as *Semidalis limbalis*, the type of which is lost. This specimen is obviously conspecific with the above-mentioned and *S. limbalis* is thus a synonym of *S. mascarenica*, as I presumed (MEINANDER 1972).

The specimens from the Seychelles also showed great variation in the colour of head and wings, representing both formae *fusca* and *alba*. Antennae 30—35-segmented. Length of fore wing 2.4—2.7 mm, of hind wing 2.3—2.4 mm.

In addition to Madagascar and the Seychelles, the species is also recorded from Réunion, if I am correct in assuming (1972:338) that *S. nigrivena* Fraser is conspecific with the present species.

Present material: Madagascar, Sambirano, Lokobe Nossi-Bé, 6 m, 1957-11-09—23, 4 ♂♂ 1 ♀ (f. *fusca*); Madagascar-Nord, Montagne d'Ambre, 1000 m, 1957-11-23—12-04, 1 ♂ (f. *fusca*); Madagascar-Centre, Ambohitantely, 1600 m, 3 ♀♀ (f. *fusca*); Sommet Nosiarivo 2000 m, 1 ♂ 2 ♀♀ (f. *alba*), 1 ♂ 1 ♀ (f. *limbalis*); Plateau Soaiandranana, 2060 m, 1958-01-14—17, 5 ♀♀ (f. *alba*); Rivière Zomandoa, 1650 m, 2 ♂♂ (f. *limbalis*).

The Finnish species of *Meotica* Mulsant & Rey (Coleoptera, Staphylinidae)

Jyrki Muona

Abstract

MUONA, JYRKI: The Finnish species of *Meotica* Mulsant & Rey (Coleoptera, Staphylinidae). — Notulae Entomol. 54:63—64. 1974.

A revision of the Finnish *Meotica* material has revealed that six species exist in Finland. Two of them, *M. exilis* Erichson and *M. hanseni* Scheerpeltz have formerly been recorded from Finland. *M. pallens* Redtenbacher, *M. exillima* Sharp, *M. apicalis* G. Benick and *M. lobsei* G. Benick are new to the Finnish fauna. Two species have to be excluded, *M. exiliformis* Joy has been synonymized with *M. exilis* and *M. moczarskii* Scheerpeltz with *M. hanseni*. The species and their distribution in Finland are listed.

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HELLÉN (1947) mentions only one Finnish *Meotica* species, *exilis* Erichson. LINDROTH (1960) lists four species: *M. exilis* Erichson, *M. hanseni* Scheerpeltz, *M. moczarskii* Scheerpeltz and doubtfully *M. exiliformis* Joy. A study of the Finnish material showed that six species exist in Finland. The genitalia of five of them are described in STRAND's revision (1955), all six species are mentioned in PALM's key (1972). There has been, however, great confusion in the nomenclature of this genus. LOHSE's revision of the Central European species of *Meotica* in HARDE et al. (1974) is based on the nomenclature established by BENICK (1968). As I find BENICK's interpretation the best one available, I will follow it. In this situation it is quite useless to pay regard to such older records that could not be revised.

I have been able to examine the following Finnish collections, a total of 93 specimens: Zoological Museum of the University, Helsinki (ZMH) 40 exx.,

Coll. S. Stockmann (S) 25 exx., Coll. J. Muona (M) 21 exx., Coll. I. Rutanen (R) 6 exx., Coll. E. Helve (H) 1 ex.

In the following list the distribution of the Finnish *Meotica* species is given, from Finland in detail, from Scandinavia in general. In some cases of little known species the biotops are described. Further information on the range of these species outside Northern Europe, as well as on their biology, is available e.g. in HORION (1967) and PALM (1972).

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MEINANDER, M. 1972: A revision of the family Coniopterygidae (Planipennia). — Acta Zool. Fennica 136:1—357.

Meotica pallens Redtenbacher

Synonym: *indocilis* Heer

This species has previously been recorded, with some doubt, from Norway (STRAND, 1955). This is the first record from Finland.

Examined specimens: *N*: Tenhola, 28. 4. 1974 4 exx. (Muona, in M). The specimens were taken by the opening of a muskrat nest (*Ondatra zibethicus*) on a marshy lakeside.

Meotica hansenii Scheerpeltz

Synonym: *moczarskii* Scheerpeltz

Denmark, Norway, Sweden and Finland.

Examined specimens: *Ta*: Urjala, 10. 5. 1952 15 exx. (Stockmann & Stenius, in many collections); *Sa*: Joutseno 1920 1 ex. (Blomqvist, in ZMH); *Ik*: Kivennapa and Muolaa 2 exx. (Palmén, in ZMH and S).

Meotica lohsei G. Benick

Synonym: *strandii* Scheerpeltz

Norway, recently taken also in Sweden (STIG LUNDBERG, oral comm.) These are the first records from Finland.

Examined specimens: *N*: Hyvinkää, 28. 5. 1973 6 exx. (Rutanen, in R). Taken in flight in woodland; Helsinki, 15. 3. 1974 1 ex. (Helve, in H). Sifted from humus on moist ground under birches; *Tb*: Konnevesi, 20. 5. 1974 5 exx. (Muona, in M). Under decayed leaves on sandy lakeside together with *Myllaena dubia* Gr., *M. gracilis* Matth. and *Trogophloeus gracilis* Mannh.

Meotica exilis Erichson

Synonyms: *exiliformis* Joy s. STRAND 1955 and PALM 1972

Denmark, Norway, Sweden and Finland. The commonest *Meotica* species in Europe. I have seen 44 Finnish specimens.

Examined specimens: *N*: Helsinki, Vantaa, Espoo, Sipoo, Pyhtää. Many records; *Sa*: Ristiina and Joutseno (Linnaniemi, Thuneberg, in ZMH); *Kl*: Salmi 1 ex. (Palmén, in ZMH); *Kon*: Äänislinna (Karvonen, in many collections); *Kol*: Syväri 1 ex. (Palmén, in ZMH).

Meotica exillima Sharp

This species has not formerly been recorded from Northern Europe.

Examined specimens: *N*: Pyhtää 25. 5. 1969 2 exx. (Muona, in M); *Oa*: Lappfjärd, 10. 4. 1941 5 exx. (Har. Lindberg, in ZMH).

Meotica apicalis G. Benick

Synonyms: *exilis* Joy s. STRAND 1955 and PALM 1972, *clavata* G. Benick

Denmark, Norway, Sweden. New to the Finnish fauna.

Examined specimens: *N*: Espoo and Vantaa, 5 exx. (Many collectors, in ZMH); *Ks*: Paanajärvi and Virolahti, 3 exx. (Platonoff, in ZMH and S).

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Rutsystems-beteckning för angivande av fyndplats inom biologisk forskning

De naturvetenskapliga museerna, samfunden och föreningarna har kommit överens att inom de biologiska vetenskaperna använda enhetskoordinatsystemet för betecknande av fyndplatser och iakttagelseorter. Det är därför att rekommendera att alla entomologer inför koordinatbeteckningar på de etiketter de låter trycka.

Enhetskoordinatsystemet är benämningen på ett rätvinkligt koordinat- och rut-system, vars p-axel sammanfaller med meridianen E 27° och som är angivet på de grund- och topografiska kartor i skala 1 : 20 000 och 1 : 100 000 som har utkommit efter år 1962, samt på de år 1967 utkomna generalkartorna i skala 1 : 400 000. Ifrågavarande koordinatsystem anges på de nämnda kartorna med röda (bruna) rutor eller marginalbeteckningar. Enhetskoordinaterna är desamma som de på grundkartorna med svart angivna sifferbeteckningar och rutor, vilkas p-axel sammanfaller med p-axeln i enhetskoordinatsystemet.

Koordinattalet betecknar ett kvadratisk område, vars storlek bestäms av antalet siffror i koordinatbeteckningarna. Områdena kan sammanslås till större eller delas i mindre rutor med decimaler. Därvid är koordinatbeteckningarnas sifferantal i motsvarande grad mindre eller större. Varje rutas decimalindelning sker med siffrorna 0 till 9 nedifrån uppåt och från vänster åt höger. Koordinatbeteckningen är tvådelad. Dess första del anger rutans p-koordinat och dess senare del rutans i-koordinat. Mellan dessa delar kan i skrift användas ett kolon. p-koordinaten börjar alltid med siffran 6 eller 7, vilken betecknar 1 000 km. i:s värde i origo vid p-axeln är 500 km. Antalet siffror i koordinattalen är sålunda alltid udda och p innehåller alltid en siffr mera än i.

Angivande av koordinaterna för en ort eller plats sker med den noggrannhet, som i det aktuella fallet kan betecknas som ändamålsenlig. Om t.ex. platsens läge anges med en noggrannhet av 1 kvadratmil, är koordinattalet 5-siffrigt (t.ex. 669 : 40 eller 66940). Om angivelsen sker med noggrannheten av 1 ha är koordinattalet 9-siffrigt (t.ex. 66940 : 4009 eller 669404009). I sammandrag gällande utbredningsuppgifter och i andra därmed jämförbara fall insamlas uppgifterna i regel per grundruta, varmed avses en ruta vars yta är 1 kvadratmil. Vid lokala undersökningar används givetvis mindre rutor.

Utöver platsangivelse baserad på rutsystemet bör platsbeteckningen lämpligen samtidigt även ske med angivande av kommunens, byns, terrängformationers osv. namn, likaså skall beteckningarna för de naturvetenskapliga provinserna fortfarande användas. Vid användningen av kommunernas namn är det skäl att beakta, att kommunnamnet betecknar det område, som kommunen omfattade under det år, under vilket iakttagelsen gjordes.

Finland 669 : 40

N. Sibbo

24. VII. 1971

Kalle Johansson

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Die Nematinen Finnlands III (Hymenoptera, Tenthredinidae) Gattung *Pachynematus* Konow

Wolter Hellén

Abstract

HELLÉN, WOLTER: Die Nematinen Finnlands III (Hymenoptera, Tenthredinidae). Gattung *Pachynematus* Konow. (The Nematinae of Finland III. The Genus *Pachynematus*.) — Notulae Entomol. 54:65—80. 1974.

A continuation of the author's earlier monographies containing key to the species and surveys of the distribution of the 22 species recorded from Finland. New synonyms recorded are: *P. clitellatus* Lepeletier, 1823 (= *P. angustatus* Lindqvist, 1949), *P. parvilabris* Thomson, 1871 (= *P. punctifrons* Malaise, 1921, *P. acutiventris* Hellén, 1948, *P. glabriceps* Lindqvist, 1949) and *P. tenuiserra* Lindqvist 1949 (= *P. albiventris* Lindqvist, 1959).

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Die erste zusammenfassende Arbeit über *Pachynematus* Knw (1890) stammt von KONOW (1903—1904), der die damals bekannten paläarktischen Arten revidierte. Seitdem findet man selbstständige Bearbeitungen der ganzen Gattung in den Handbüchern der Tenthredinoidea Mitteleuropas von ENSLIN (1912—1918) und der Blattwespen der britischen Inseln von BENSON (1958a).

Pachynematus unterscheidet sich von *Nematus* Panz. (*Pteronidea*) u. Verw. vorerst durch die Klauen, die nicht gespalten sondern fast immer gezähnt sind. Der Zahn, der meistens kurz ist, liegt nicht unweit der Spitze sondern nahe der Mitte der Klaue. Von der sehr nahestehenden *Pristiphora* Latr. sind die Unterschiede undeutlicher und fast nur in dem \pm gut begrenzten Stirnfeld und dem öfters ausgerandeten Clypeus zu finden. Die Costa ist am Ende meistens weniger angeschwollen. Dieser schwachen morphologischen Merkmale ungeachtet ist *Pachynematus* nunmehr als ein eigenständige Gattung anerkannt worden,

was auch die larvalen Untersuchungen von LORENZ & KRAUS (1957) stützen.

Die *Pachynematus*-Arten scheinen einander nahe zu stehen weshalb Untergattungen schwer abzusondern sind. Ross hat für die nordamerikanische, u.a. durch die lange Sägescheide ausgezeichnete Art *dimmocki* Cress. (*scutellatus* Htg sehr nahe stehend) die Gattung *Piconema* errichtet, die jedoch von BENSON (1958b) nicht anerkannt wird. Auch *Eitelius* Kont., welche Gattung vornehmlich wegen des abweichenden Klauenbaus für *dentatus* Lindqv. aufgestellt wurde, kann nicht akzeptiert werden, denn die Klauenlänge ist ein variables Merkmal und fast gleich gebildete Klauen kommen bei den sonst nicht ganz nahe stehenden Arten *excisus* Thoms., *tenuiserra* Lindqv. (♀) und bisweilen auch *parvilabris* Thoms. vor.

In einigen Gruppen der Gattung scheinen die Species stark variabel zu sein, und über das Artrecht mancher Formen herrschen unter den Autoren Meinungsverschiedenheiten. Nicht selten sind Ar-

ten nur aufgrund von einzelnen Stücken beschrieben worden; in manchen Fällen wiederum ist das eine Geschlecht unbekannt oder hypothetisch. Fast jede Art hat eine gewisse Variationsbreite, die sich nicht nur koloristisch sondern auch in Proportionsänderungen einzelner Organe äussert. Bei dem ♀ hat man sich, wenn andere Merkmale versagen, oft nur auf den ± abweichenden Bau der Säge verlassen, obgleich manche Forscher sich über die bedeutende interspezifische Variation der Sägezählung geäussert haben. Neulich hat auch WEIFFENBACH (1962: 135) die aufsehenerregende Entdeckung gemacht, dass bei einer Eizucht eines *clitellatus*-Weibchens die Plattenzähne der Säge bei den gezogenen Stücken zwischen 10 und 18 variierten! — Bei den ♂♂ ist der Bau des 8 Tergites vielfach als taxonomisches Merkmal benutzt worden, und mehrere neue Arten sind fast ausschliesslich hierauf beschrieben worden. Der Endrand dieses Tergites ist gerade abgestutzt oder vorgezogen. Im hinteren Teil befindet sich jederseits eine ± grosse und tiefe Grube, zwischen denen sich der mehr oder weniger gewölbte Rücken, »Fortsatz« genannt, erhebt. Das Tergit ist schwach chitiniert, der Endrand nicht selten sogar häutig. Die Gruben und der »Fortsatz« sind nicht begrenzt. Beide variieren bedeutend individuell, was z.B. unter den leicht kenntlichen Arten *mollis* Htg und *clibrichelus* Cam. festzustellen ist. Der taxonomische Wert dieses Merkmals ist darum zweifelhaft.

Die grössten Variationen trifft man bei *clitellatus* Lep., was schon der Wald der Synonyme zeigt. In dieser Gruppe haben sowohl Farbenmerkmale wie die Konfiguration des 8 Tergites beim ♂ Anlass zur Aufstellung fraglicher Arten gegeben. Ebenso ungenügend bekannt ist auch die boreale *parvilabris*-Gruppe, wo die ♀♀ schwierig, die ♂♂ unmöglich zu unterscheiden sind. So ist *tenuiserra*

Lindqv. (♀) fast nur durch den langen Klauenzahn gekennzeichnet. Die Klauengrösse und Länge ist sogar bei einem und demselben Individuum variabel, und bei den ♂♂ dieser Art sind sie offenbar immer kurz. *P. freyi* Lindqv. wird durch die geringe (6—8) Zahl der Sägezähne unterschieden, welches Merkmal nach den Untersuchungen WEIFFENBACHS (1962) unzuverlässig sein kann. Weil mein zur Verfügung stehendes Material von ♀♀ dieser Arten sehr gering ist, kann der Status dieser beiden Arten vorläufig nicht abgemacht werden. Hier will ich noch die vermutlich ganz richtige Beobachtung BENSONS (1962:135) unterstreichen: »Arctic and boreal sawfly species are often more variable in color and form than those of more temperate regions, and have more abnormalities«. Solche Arten sind z.B. die borealen *Amauronematus polaris* Hgr. *A. reticulatus* Hgr., *Pristiphora coactula* Ruthe und *Pachynematus parvilabris* Thoms.

Die Larven der *Pachynematus*-Arten leben, soweit es bekannt ist, überwiegend auf Gräsern oder Cyperaceen. *P. scutellatus* Htg, *pallescens* Htg, *montanus* Zadd. und *styx* Bens. kommen auf *Picea* und *Abies* vor, während *dentatus* Lindqv. die Blätter von *Salix* skelettiert. An *Polygonum* ist *P. albipennis* Htg und an *Rumex* *P. rumicis* L. gebunden. *P. pumilio* Knw entwickelt sich in den Beeren von *Ribes nigrum*, und *mollis* Htg lebt auf *Vaccinium myrtillus*.

Pachynematus-Arten sind aus den paläarktischen und nearktischen Regionen bekannt, wo viele circumpolar sind. Heute kennt man etwa 70 Arten, manche von ihnen nur im männlichen Geschlecht. In Mitteleuropa hat man etwa 20 Arten gefunden, die fast alle auch in Nordeuropa vorkommen. Aus Südeuropa sind von sicheren Arten *pallescens* Htg, *vagus* F. *clitellatus* Lep. *albipennis* Lep. und *rumicis* L. angeführt worden.

Aus Finnland sind insgesamt 41 *Pachynematus*-Arten gemeldet worden. Von diesen gehörten einige zu anderen Gattungen, und viele sind als Synonyme einzuziehen. So ist nach den Untersuchungen LINDQVISTS *lapponicus* Knw identisch mit *Pristiphora borea* Knw, und *alpestris* Ensl. gehört zur Gattung *Lygaeonematus* (= *Pristiphora*). — Nach dem vorliegenden Holotypus ist *Pachynematus crassicauda* Lindqv. eine *Pristiphora* und wahrscheinlich *pallidula* Knw. *P. perkioemaekii* Lindqv. ist m.A.n. ein *Nematus* (*Pteronidea*) und dieselbe Art, die aus unserem Lande als *similator* Först. v. *monticola* Thoms. angeführt worden ist. — *Pachynematus nigriceps* Knw ist lieber in die Gattung *Pristiphora* zu versetzen, während *Pristiphora* (*Lygaeonematus*) *mollis* Htg ein *Pachynematus* zu sein scheint.

Zur Kenntnis unserer *Pachynematus*-Arten haben besonders Forsius und Lindqvist beigetragen, jener durch das erste vollständige Blattwespenverzeichnis Finnlands (1919), dieser durch eine Menge Publikationen über unsere Fauna mit u.a. der Beschreibung vieler neuen Arten.

Im nachfolgenden Aufsatz sind aus Finnland 22 *Pachynematus*-Arten verzeichnet worden, von denen 8 als boreal-arktisch zu bezeichnen sind. Es fehlt die aus N.Amerika (New York) beschriebene *smithae* Ross (*smithiae* auct. err.), welche im weiblichen Geschlecht unbekannte Art von BENSON aus England und Schweden und von RANIN (1965) aus Lappland angeführt worden ist. Auch *P. vaginosus* Knw (aus Sibirien beschrieben), welche Art LINDQVIST (1943:143) aus mehreren Orten in Finnland und später (1961:31) nur als ♂ bei uns erwähnt, ist mir unbekannt.

Anerkennungen. Nachfolgende Bearbeitung gründet vornehmlich auf den Kollektionen des Zoologischen Museums der hiesigen Universität, wo sich u.a. auch die Hauptsammlung Lindqvists befindet, und auf meinen eigenen Einsamm-

lungen. Eine wertvolle Hilfe habe ich von Mag. E. Lindqvist erhalten, der mir Material aus seiner neuen Kollektion zur Verfügung gestellt hat. Ferner danke ich bestens Prof. C. H. Lindroth in Lund und Dr. T. Nyholm in Stockholm, welche mir Typenmaterial aus dem Zoologischen Institut in Lund und dem Riksmuseum in Stockholm zur Ansicht gesandt haben.

Übersicht der Arten

1. Mesopleuren glänzend 2
— Mesopleuren matt, dicht gerunzelt 21
2. Behaarung von Kopf und Thorax fein und hell, so lang wie der Durchmesser eines Punktauges 3
— Behaarung grob und schwarz, doppelt so lang wie der Durchmesser eines Punktauges. Lappland
..... *clibrichellus* Cam.
3. Hintertarsen wenigstens 2/3 von der Länge der Schienen. Stigma gelb oder braun 4
— Hintertarsen nur etwa 1/2 von der Länge der Schienen. Stigma ± weiss
..... *laevigatus* Zadd.
4. Schildchen gewölbt, öfters dicht punktiert. Hinterleib mit Ausnahme von Tergit 1 ganz gelb. Flügel grau
..... *albipennis* Htg.
— Schildchen flach, kaum punktiert. Färbung anders 5
5. Scheitel nicht über doppelt so breit wie lang. Körperlänge meist über 5 mm 6
— Scheitel über doppelt so breit wie lang. Körperlänge nicht über 5 mm 17
6. Hintertarsen beim ♀ so lang, beim ♂ fast so lang wie die Schienen. Stigma am Ende oft verdunkelt. Körper öfters grösstenteils gelb. — ♀. Sägescheide kompress, in lateraler Ansicht meist am Ende abgestutzt. — ♂. Tergit 8 mit scharfem Mittelkiel 7
— Hintertarsen etwa 2/3 von der Schienlänge. Stigma am Ende nicht

- dunkler als an der Basis. — ♀. Sägescheide nicht komprimiert, in lateraler Ansicht am Ende abgerundet. — ♂. Tergit 8 mit gewölbtem oder ohne Mittelkiel 10
7. Scheitel nur um 1/4 breiter als lang. Fühler von Körperlänge; Glied 3 so lang wie 4. Clypeus tief ausgerandet. — ♀. Sägescheide stark verlängert, doppelt so lang wie die Cerci *scutellatus* Htg.
- Scheitel 1.5mal so breit wie lang. Fühler kürzer als der Körper; Glied 3 kürzer als 4. — ♀. Sägescheide kaum länger als die Cerci 8
8. Längerer Sporn der Hinterschienen halb so lang wie der Metatarsus. Mesonotum stark glänzend. — ♀. Sägescheide im Profil am Ende deutlich abgestutzt 9
- Längerer Sporn der Hinterschienen 1/3 der Länge des Metatarsus. Mesonotum weniger stark glänzend. — ♀. Sägescheide im Profil am Ende nicht deutlich abgestutzt *styx* Benson
9. Stirnfeld deutlich begrenzt. Körper beim ♀ fast einfarbig gelb, beim ♂ mit bräunlichem Rücken des Hinterleibs und teilweise bräunlichem Mesonotum. — ♀. Hinterleib am Ende nicht komprimiert .. *pallescens* Htg.
- Stirnfeld undeutlich begrenzt. Körper beim ♀ grösstenteils, beim ♂ oben schwärzlich. — ♀. Hinterleib am Ende komprimiert *montanus* Htg.
10. Innerer Sporn der Hinterschienen die Mitte des Metatarsus erreichend. Clypeus kaum ausgerandet. Stigma oft ± braun 11
- Inneren Sporn der Hinterschienen kürzer als der halbe Metatarsus. Clypeus meist deutlich ausgerandet. Stigma öfters einfarbig gelb 12
11. Hinterschenkel und Stigma gelb. — ♀. Sägescheide lang, zugespitzt, von der Basis an verjüngt *vagus* F.
- Hinterschenkel und Stigma ± schwarz. — ♀. Sägescheide kurz, am Ende abgerundet, mit fast parallelen Seiten *obductus* Htg.
12. Fühler länger als der Hinterleib, zur Spitze verschmälert. Flügel meistens glasklar. Körperlänge 6—7 mm 13
- Fühler von Hinterleibslänge, fadenförmig. Flügel gelblich getrübt. Körper etwa 5 mm lang, öfters fast ganz gelb 16
13. Scheitel kaum breiter als lang; Abstand zwischen den hinteren Punktaugen etwa so lang wie der Abstand des Punktauges zum Nackenrande. Mesopleuren glatt. Kopf nicht selten hinter den Augen verbreitert. Körper öfters ± hell 14
- Scheitel deutlich breiter als lang. Mesopleuren weitläufig fein punktiert. Kopf hinter den Augen nicht verbreitert. Körper schwarz 15
14. ♀. Körper mehr oder weniger dunkel gefärbt. — ♂. Hinterleib überwiegend schwarz *clitellatus* Lep.
- ♀. Körper, mit Ausnahme von drei Striemen am Mesonotum, ganz gelb. — ♂. Hinterleib gelbrot, Basis schwarz gefleckt *kirbyi* Dahlb.
15. ♂. Tergit 8 am Endrande fast gerade abgestutzt. — ♀ mir unbekannt *moerens* Först.
- ♂. Tergit 8 in der Mitte des Endrandes ausgezogen *apicalis* Htg.
16. Kopf hinter den Augen nicht verengert. Stirnfeld deutlich. Thorax schwarz *rumicis* L.
- Kopf hinter den Augen verengert. Stirnfeld undeutlich. Körper ganz gelb *pumilio* Knw.
17. Kopf glänzend, zerstreut punktiert. — ♀. Sägescheide zur Spitze verschmälert 18
- Kopf matt, fein dicht punktiert. — ♀. Sägescheide zur Spitze verbreitert, am Ende abgestutzt. Lappland *arcticus* Lindqv.

18. Scheitel nicht über 2.5mal so breit wie lang. Stirnfeld \pm deutlich abgesetzt. Klauenzahn (wenigstens beim ♀) lang. Beine gelb 19
 — Scheitel etwa dreimal so breit wie lang. Stirnfeld fast fehlend. Klauenzahn kurz. Beine oft schwärzlich 20
 19. Unterer Stirnwulst fast fehlend. Stirnfeld schwach begrenzt. — ♂. Klauenzahn lang
 *dentatus* Lindqv.
 — Unterer Stirnwulst deutlich. Stirnfeld öfters gut begrenzt. — ♂. Klauenzahn kurz. Lappland
 *tenuiserra* Lindqv.
 20. ♀. Säge mit 14—16 Zähnen. Schenkel \pm schwarz. Lappland
 *parvilabris* Thoms.
 — ♀. Säge mit 6—7 Zähnen. Beine gelb.
 — ♂ mir unbekannt. Lappland ..
 *freyi* Lindqv.
 21. Klauen mit langem Zahn. Mittellobe des Mesonotums matt, kaum merkbar punktiert. Körperlänge 5 mm. Boreale Art *excisus* Thoms.
 — Klauen mit kurzem Zahn. Mittellobe des Mesonotums glänzend, deutlich punktiert *mollis* Htg.

P. scutellatus Hartig, 1837

♀. Kopf hinter den Augen kaum verengert. Oberkopf undeutlich punktiert, glänzend. Clypeus ziemlich tief ausgerandet. Fühler fast von Körperlänge; Glied 3 und 4 gleichlang. Scheitel um ein Viertel breiter als lang. Stirnfeld deutlich begrenzt. Mesonotum schwach punktiert. Mesopleuren fast glatt. Sägescheide fast gleichbreit, doppelt so dick und dreimal so lang wie die Cerci; lateral gesehen am Ende abgestutzt. Säge mit ziemlich niedrigen Zähnen (BENSON 1958a: Abb. 771). Hinterbeine mit gleichlangen Schienen und Tarsen; längerer Sporn halb so lang wie der Metatarsus. Metatarsus sechsmal, Glied 2 dreimal so lang wie dick. Körperlänge

6—8 mm. — Schmutzig gelb. Fühler, Stirnfleck, drei Striemen am Mesonotum, Schildchenspitze und Doppelfleckenreihen der Tergite schwärzlich. Stigma gelb bis bräunlich.

♂. Gleicht dem ♀. Tergit 8 mit schmalem Rückenkiel. Penisvalve (BENSON 1958: Abb. 810). Spitze der Hinterschienen und die Hintertarsen schwärzlich.

P. scutellatus wurde aus unserem Lande von FORSIUS (1919:15) gemeldet.

Verbreitung: Von Süd- bis Nordfinland (Ob: Pisavaara: Hk Lindb.) verbreitet, selten. — USSR: Kon: Semsjärvi (Carpelan); Lim: Fl. Lutto (Poppius), Kantalaks (J. Sahlb.), — Nord- und Mitteleuropa, Sibirien.

P. montanus Zaddach, 1882

♀. Kopf hinter den Augen schwach verengert. Oberkopf schwach glänzend. Clypeus seicht ausgerandet. Fühler kaum länger als der Hinterleib, Glied 3 kürzer als 2. Scheitel um die Hälfte breiter als lang. Stirnfeld schwach begrenzt. Mesonotum und Mesopleuren glänzend, sehr fein punktiert. Hinterleib am Ende stark komprimiert. Sägescheide schmal, wenig vortretend, von der Seite gesehen am Ende breit abgestutzt. Säge nur am Ende grob gezähnt (BENSON 1958 b: Abb. 5). Hinterschienen etwas länger als die Tarsen; längerer Sporn die Mitte des Metatarsus fast erreichend. Körperlänge 5.0—5.5 mm. — Körper gelb mit \pm ausgedehnten schwarzen Zeichnungen. Fühler schwarz, unten oft gelb. Bisweilen ist der Körper fast schwarz mit rötlichen Gesichtsseiten und Schläfen, gelben Pronotumucken und gelbem Bauch. Beine gelb mit dunkleren Hintertarsen und dunkleren Spitzen der Hinterschienen.

♂. Gleicht dem ♀ skulpturell und koloristisch. Kopf hinter den Augen stärker verengert. Tergit 8 mit schmalem Mittelkiel (BENSON 1958a: Abb. 783). Penisvalve (BENSON 1958b: Abb. 8).

P. montanus wurde aus Finnland von FORSIUS (1919:15) gemeldet.

Verbreitung: Von Südfinnland bis Lappland (Lkem: Muonio, Montell) verbreitet. — Selten. USSR: Ik: Kuolemajärvi (Ivaschinzoff). — Schweden. Deutschland. England. Schweiz.

P. pallescens Hartig, 1837

♀. Gleicht *montanus* Zadd. Kopf hinter den Augen stärker verengert. Clypeus breiter ausgerandet. Stirnfeld etwas deutlicher begrenzt. Hinterleib am Ende weniger komprimiert. Säge schmäler mit niedriger Zähnung (BENSON 1958b: Abb. 3). Körperlänge 6—7 mm. — Körper fast einfarbig gelb. Mesonotum mit schwachen bräunlichen Rückenstriemen. Beine gelb.

♀. Fühler fast von Körperlänge. Penisvalve (BENSON 1958b: Abb. 7). Stirn mit grossem schwarzen Fleck. Mesonotum und Hinterleibsrücken grössenteils schwarz. Sonst wie ♀.

P. pallescens wurde aus Finnland von mir (1936:90) gemeldet.

Verbreitung: Ab. Pargas (Reuter), Lemo (Ingeljus), Lojo (Hk. Lindb.). — Schweden. Mitteleuropa.

P. styx Benson, 1958

♀. Gleicht *montanus* Zadd. Mesonotum etwas matter. Schildchen breiter. Hinterleib am Ende viel weniger komprimiert. Sägescheide von der Seite gesehen deutlich stärker verengert und an der Spitze schwächer abgestutzt (BENSON 1958 b: Abb. 2). Längerer Sporn der Hinterschiene viel kürzer, nur ein Drittel der Länge des Metatarsus erreichend. Körperfarbe dunkel, Bauchsternite seitlich schwarz gefleckt.

♂. Von *montanus* Zadd. durch kürzeren Hinterschienenenspornen und schmäleren Griffel der Penisvalve (BENSON 1958 b: Abb. 9) unterschieden. Tergit 8 mit undeutlichem Mittelkiel.

P. styx wurde aus unserem Lande von LINDQVIST (1960b:155) gemeldet.

Verbreitung: N: Helsingin pit. 23. 5. 1952 (Perkiömäki). — Deutschland. Belgien (Teunissen). England.

P. vagus Fabricius, 1781

♀. Kopf hinter den Augen schwach verengert. Oberkopf wenig glänzend, ziemlich stark gerunzelt. Clypeus kaum ausgerandet. Fühler etwas länger als der Hinterleib, Glied 3 kaum so lang wie 4. Scheitel doppelt so breit wie lang. Stirnfeld gross, deutlich begrenzt. Thorax schwach glänzend. Sägescheide zugespitzt, an der Basis doppelt so breit wie die Cerci. Säge mit kurzen, halbkreisförmig von einander entfernten Zähnen (BENSON 1958a: Abb. 777). Beine schlank; Hinterschienen länger als die Tarsen, innerer Sporn fast bis über die Mitte des Metatarsus reichend. Körperlänge 6—7 mm. — Schwarz. Mundteile, Pronotum, Tegulae, Costa und Bauch gelblich. Stigma teilweise oder ganz dunkelbraun. Endränder der Tergite oft hell. Beine gelb; Spitze der Hinterschienen und Hintertarsen schwarz.

♂. Gleicht dem ♀. Fühler fast von Körperlänge. Endrand des 8. Tergites in der Mitte vorgezogen, bisweilen fast quadratisch (BENSON 1958a: Abb. 786).

P. vagus wurde aus Finnland von FORSIUS (1919:15) gemeldet.

Über das ganze Gebiet bis zum nördlichsten Lappland verbreitet, häufig. Das Männchen ist ziemlich selten. — Fast ganz Europa. Sibirien. Mongolien. Nordamerika.

P. obductus Hartig, 1837

♀. Steht *vagus* F. nahe. Kopf stärker glänzend, schwach punktiert. Fühler etwas schlanker. Stirnfeld undeutlicher begrenzt. Mesonotum glänzender. Sägescheide kürzer und dicker, dreimal so breit wie die Cerci, am Ende gerundet. Säge wie bei *vagus*, Zähne etwas spitzer und näher beieinander. — Stigma meistens dunkelbraun. Hinterschenkel im Endteil dunkel, bisweilen ganz schwarz (ab. *conductus* Ruthe), selten ganz rot. Körpergrösse 4.5—5.0 mm.

♂. Unterscheidet sich von *vagus*-♂ durch das schwarzbraune Stigma und

durch den grösseren und stärker vorspringenden Endrand des 8 Tergites (in der Abbildung BENSONS 1958a:793 übertrieben gross gezeichnet).

P. obductus wurde von FORSIUS (1919: 15) aus unserem Lande gemeldet.

Verbreitung: Über das ganze Gebiet bis zum nördlichsten Lappland verbreitet, das Weibchen häufig, das Männchen sehr selten. — Fast ganz Europa. Grönland. Nordasien. Nordamerika.

P. clitellatus Lepeletier, 1823

P. angustatus Lindqvist, 1949 syn.n.

♀. Kopf glänzend, hinter den Augen meistens etwas erweitert. Clypeus tief rundlich ausgeschnitten. Fühler etwas länger als der Hinterleib; Glied 3 so lang wie 4. Scheitel etwas breiter als lang. Stirnfeld fast kreisrund, deutlich begrenzt. Thorax glänzend, fein undeutlich punktiert. Mesonotum mit gekielter Mittelfurche. Sägescheide dick, am Ende abgerundet, 2—3mal so dick wie die Cerci. Säge mit einer variablen Zahl von kurzen, regelmässigen voneinander halbkreisförmig entfernten Zähnen (BENSON 1958a: Abb. 777 (*vagus*)). Hinterschienen länger als die Schenkel mit den Trochanteren; innerer Sporn so lang wie die Breite der Schienenspitze. Klauen mit ziemlich grossem Zahn. Körperlänge 4.5—7.0 mm. — Körperfarbe variabel. Normalerweise sind Kopf, Thorax, Bauch und Beine gelblich, während drei Striemen des Mesonotums, Mesosternum und Binden der Tergite von schwärzlicher Färbung sind. Flügel klar. Geäder braun; Costa und Stigma weisslich. Nicht selten breiten sich die Binden der Tergiten so aus, dass der Rücken des Hinterleibs ausser der Spitze ganz schwarz erscheint (ab. *trisinatus* Först.). Bisweilen sind die Striemen des Mesonotums breiter, die Mitte des Pronotums, das Schildchen, ein Stirnfleck und der Hinterkopf ± schwarz (ab. *palliceps* Htg.). Die schwarze Farbe kann sich noch mehr ausbreiten, wobei die Meta-

pleuren, die vorderen Schenkel und die Schienen und Tarsen der Hinterbeine schwarz werden (ab. *transigens* Ensl.). Schliesslich kommen Stücke mit ganz schwarzem Thorax und Hinterleib vor.

♂. Tergit 8 mit breit vorspringendem Endrand und ± wahrnehmbarem Rückenkiel (BENSON 1958 a: Abb. 794). Die Penisvalve zeichnet sich durch den langen Griffel aus BENSON 1958 a: Abb. 813). — Schwarz. Mundteile, äusserer Augenrand, Tegulae, Hinterleibsspitze und Beine hell.

P. clitellatus wurde von FORSIUS (1919:15) aus Finnland gemeldet.

P. xanthocarpus Htg. Diese von manchen Autoren missverständene Art wurde von WEIFFENBACH (1962:135) aufgeklärt. Es handelt sich um eine grosse Art, die sich u.a. durch ganz abweichend gebaute Säge von der *clitellatus*-Gruppe unterscheidet. Die von FORSIUS (1919: 15) aus unserem Lande angeführten Exemplare sind *clitellatus* mit stärker schwarzgefärbten Kopf und Hinterleib.

P. angustatus Lindqv. (1949:85) ist aufgrund von kleineren lappländischen Stücken (♀) von *clitellatus* mit weniger angeschwollenen Schläfen beschrieben worden. Solche Exemplare kommen nicht selten auch in Südfinnland vor. Die Sägen der beiden Formen sind gleich (die Abbildung LINDQVISTS (1949:48) nicht ganz korrekt). Die eigentümliche vom Autor gezeichnete einem zweiten Griffel ähnliche Bildung der Penisvalve (LINDQVIST 1965: Abb. 21) muss eine chitinöse Monstrosität sein, denn sie ist auf der zweiten Valve des abgebildeten Exemplars viel schwächer ausgebildet.

P. sulcatus Benson wird von LINDQVIST (1949:116) als in Finnland vorkommend erwähnt. So benannte Stücke in der Sammlung des hiesigen Entomologischen Museums gehören zu *clitellatus*.

Verbreitung: Über das ganze Gebiet bis zum nördlichsten Lappland verbreitet. Häufig. — Fast ganz Europa. Sibirien.

P. kirbyi Dahlbom, 1835

Nematus diaphanus Eversmann, 1847

N. umbripennis Eversmann, 1847

♀. Steht *clitellatus* Lep. sehr nahe und plastische unterscheidende Merkmale sind schwer zu finden. Der Körper ist öfters etwas gestreckter und die Hinterbeine etwas länger mit längeren Sporen. Körperlänge 4.5—6.0 mm. — Körper schmutzig gelb mit kleinem oder ohne schwarzen Stirnfleck. Thorax gelb mit schwarzem Mesosternum und mit drei schwarzen Striemen am Mesonotum. Hinterleib einfarbig gelb, selten mit braunen Segmentbändern. Flügel ± gelblich.

♂. Von *clitellatus* durch den schmälere, distal stärker verengerten, hervorstehenden Endteil des 8. Tergits, welches ohne Rückenkiel ist, zu unterscheiden. Penisvalve (BENSON 1958 a: Abb. 805). — Hinterleib meistens einfarbig rot, selten die ersten Tergite verdunkelt.

Wie ENSLIN (1916:478) wäre ich geneigt, in *kirbyi* nur eine Form von *clitellatus* zu sehen.

P. diaphanus und *P. umbripennis* wurden als verschiedene Arten von FORSIUS (1919:15) aus Finnland gemeldet.

P. kirbyi Dahlb. wurde von LINDQVIST (1956:11) nach Untersuchung der Nematinentypen Dahlboms als identisch mit *diaphanus* Eversm. erklärt.

Verbreitung: Von Süd- bis Nordfinnland (Ok: Suomussalmi: Hellén) verbreitet. Nicht häufig. — Mittel- und Osteuropa.

P. apicalis Hartig, 1837

♀. Steht *clitellatus* Lep. nahe. Körper etwas schlanker. Kopf hinter den Augen nicht erweitert. Unterer Stirnwulst nicht unterbrochen. Scheitel um ein Viertel breiter als lang (bei *clitellatus* fast quadratisch). Mesonotum und Mesopleuren etwas weniger glänzend. Schildchen so lang wie breit. Sägezähne etwas weiter von einander entfernt, ohne Kleinzähne (BENSON 1958 a: Abb. 778). Körperlänge 6.5—7.0 mm. — Körper schwarz. Ein

grosser Schläfenfleck und die Abdominalspitze bräunlich. Clypeus meistens hell. Stigma gelb. Beine gelb; Schenkel zum Teil, Spitzen der Hinterschienen und Hintertarsen schwarz.

♂. Gleicht dem ♂ von *clitellatus* Lep. Tergit 8 am Hinterrande etwas weniger vorgezogen, ohne Rückenkiel, meistens mit stärker geschwärzter Mittelpartie. Penisvalve (BENSON 1958 a: Abb. 804).

P. apicalis wurde aus Finnland von LINDQVIST (1936:90) gemeldet.

P. truncatus BENSON 1948 (= *extensicornis* Norton 1861 (*foveolatus* Konow 1903)) wird vom Autor (BENSON 1958 a: 241) von *clitellatus* Lep. im weiblichen Geschlecht durch breiteres Schildchen und durch den längeren Sporn der Hinterschiene unterschieden. Beim Männchen ist die Verlängerung des 8. Tergits viel kürzer und breiter (BENSON 1958 a: Abb. 788). Die Art wurde von LINDQVIST (1949:116) als bei uns mehrerorts vorkommend erwähnt. Ein von ihm determiniertes Pärchen (♀ *N*: Kirkkonummi: Karvonen, ♂ *N*: Helsingør: Lindqvist) gehört m.A.n. zu *apicalis* Htg.

Verbreitung: Fast über das ganze Gebiet bis Lappland (*Li*: Ivalo: Lindqvist) verbreitet. Ziemlich selten. — USSR (Archangelsk: Hellén). — Schweden. Deutschland. England. Schweiz. N. Amerika.

P. moerens Förster, 1854

♀. ENSLIN (1916:460) bringt *moerens* Först. (*pleuralis* Thoms.), nicht aber *apicalis* Htg, in eine Gruppe, die durch die deutlich und ziemlich stark punktierten Mesopleuren gekennzeichnet wird. BENSON (1958 a:238) unterscheidet *moerens* Först. und *apicalis* Htg (nebst *clibrichellus* Cam.) von nahestehenden Arten dadurch, dass der Innensporn der Hinterschiene deutlich länger als die Breite des Schienendes, die Länge der Hinterschiene weniger als 1 1/3 der Schenkellänge ist, und ferner dass die Mesopleuren oft ± mit Knötchen (tubercles) bedeckt sind.

Von *apicalis* unterscheidet sich *moerens*-♀ dadurch, dass die Fühler nur etwa so lang wie die Costa des Vorderflügels sind (bei *apic.* = Costa + 1/2 Stigma), das 4. Fühlerglied kürzer als die Augenslänge (bei *apic.* länger), der Hintertarsus 3.5mal so lang wie breit (bei *apic.* 4.5mal) und der Hintertarsus so lang wie der Schiene ist (bei *apic.* 3/4 der Schienenslänge). Ich habe keine Stücke mit diesen Merkmalen gesehen und glaube, dass *moerens*-♀ bei uns vorläufig unbekannt ist.

♂. Tergit 8 am Endrand kaum vorgezogen, breit abgestutzt, mit breitem, ungekielten Rücken (BENSON 1958 a:Abb. 790). Penisvalve (BENSON 1958 a:Abb. 802).

P. moerens wurde aus Finnland von LINDQVIST (1947:27) angeführt.

Verbreitung: *Tb*: Pihtipudas (Lindqvist, Hellen). *Lkem*: Pallastunturi (Wegelius). *Li*: Utsjoki (Lindqvist). — USSR: *Ik*: Kuolemanjärvi (Ivaschinzoff). *Ks*: Paanajärvi (Platonoff). — Schweden. Island. Deutschland. England. Österreich.

P. clibrichellus Cameron, 1878

♀. Kopf hinter den Augen nicht verengert, auffallend lang schwärzlich behaart. Clypeus kaum ausgerandet. Scheitel doppelt so breit wie lang. Stirnfeld schwach begrenzt. Supraantennalgrube kaum merkbar. Thorax schwach glänzend, deutlich punktiert, lang schwarz behaart. Mittelfurche des Mesonotums tief und breit. Stigma dreimal so lang wie breit, bräunlich. Säge (BENSON 1958 a:Abb. 779). Beine schlank. Hintertarsen fast so lang wie die Schienen. Innensporn der Hinterschiene kurz, etwa 1/3 der Länge des Metatarsus. Klauen lang, schwach gebogen, in der Mitte mit kleinem Zahn. Körperlänge 6—7 mm. — Schwarz. Beine gelb mit grösstenteils schwarzen Schenkeln und verdunkelten Hintertarsen.

♂. Kopf etwas kleiner als beim ♀, hinter den Augen schwach verengert. Fühler fast von Körperlänge. Tergit 8

am Ende dreieckig vorgezogen mit flachen Gruben und schwachem Rückenkiel. Genitalvalve (BENSON 1958 a:Abb. 803).

P. clibrichellus wurde von mir (1955: 121) aus Finnland vorgelegt.

Verbreitung: *Lkem*: Ounastunturi (Lingonblad). *Le*: Kilpisjärvi (Carpelan), Malla (Hellen). *Li*: Lemmenjoki (Hellen). — USSR: *Lp*: Ponoj (Frey), Kanin (Poppius), Novaja Semlja. — Norwegen. Schottland. Sibirien. N.Amerika.

P. albipennis Hartig, 1837

♀. Kopf hinter den Augen kaum verengert, fast glatt. Clypeus mässig ausgerandet. Fühler etwa von Hinterleibslänge, zur Spitze schwach verjüngt. Scheitel fast doppelt so breit wie lang. Stirnfeld ± begrenzt. Supraantennalgrube mehr oder weniger tief. Mesonotum sehr zerstreut fein punktiert. Schildchen gewölbt, meistens deutlich punktiert. Sägescheide an der Basis dick, zur Spitze stark verschmälert, kaum länger als die Cerci. Säge mit niedrigen Zähnen (BENSON 1958 a:Abb. 774). Innensporn der Hinterbeine fast kürzer als die Breite des Schienensendes. Körperlänge 3.5—6.0 mm. — Schwarz. Mundteile und Fleck hinter den Augen gelb. Farbe des Thorax variabel. Mesonotum, Mesosternum und Schildchen schwarz, der Rest des Mittel-leibs ± gelb. Hinterleib und Beine gelb.

♂. Fühler fast von Körperlänge. Kopf hinter den Augen rundlich verschmälert. Tergit 8 am Ende wenig vorgezogen mit flachen Gruben und schwachem Rückenkiel. Färbung ebenso variabel wie beim ♀.

P. albipennis wurde aus Finnland von FORSIUS (1919:15) gemeldet.

P. salicicola Ensl. (1918:464) wurde als eine Varietät von *albipennis* beschrieben, die sich durch gelbe Unterseite der Fühler und durch stärker ausgebreitete Gelbfärbung des Thorax und des Kopfes kennzeichnete. LINDQVIST (1945:179, 1964:130, Abb. 223) hält diese Form für eine gute Art, die ausser der verschiede-

nen Färbung durch kleinere Grösse, fast unpunktirtes Schildchen und den verschiedenen Bau der Penisvalve unterschieden wird. — Kleinere Stücke von *albipennis* sind i.a. heller gefärbt, aber von den von mir gesehenen vielen kleinen, variabel gefärbten einheimischen und ausländischen Exemplaren hat nur ein ♂ unten gelbe Fühler. Ein nennenswerter Unterschied in der Schildchenpunktierung und Form der Penisvalve ist kaum zu entdecken.

P. sannio Knw wurde von LINDQVIST (1959:68) aus Finnland erwähnt. Nach Untersuchung der Type Konows erklärte er später (LINDQVIST 1961:31) die Art als identisch mit dem variablen *albipennis* Htg.

Verbreitung: N: Lappvik (Hk. Lindb.), Munksnäs (Lindqvist). St: Lavia (Winter). Ta: Lammi (Wiitasaari). Ks: Kuusamo (Perkiömäki). Lkem: Pelkosenniemi (Frey). — USSR: Ik: Terijoki (Hellén). Kol: Vaasen (Karvonen), Kol: Teru (Kontkanen). Kon: Jalguba (Kangas). — Europa. Sibirien.

P. dentatus Lindqvist, 1937

♀. Kopf hinter den Augen kaum verengert, undeutlich glänzend. Clypeus flach ausgerandet. Fühler etwas länger als der Hinterleib, Glied 3 kaum kürzer als 4. Scheitel doppelt so breit wie lang. Stirnfeld schwach begrenzt. Supraantennalgrube klein oval. Mesonotum ziemlich glänzend, fein punktiert. Mesopleuren fast glänzend glatt. Sägescheide kurz und dick, am Ende abgestutzt, nicht länger als die Cerci. Sägezähne etwas niederliegend, wenig spitz; Rückenseite eines Zahnes etwa doppelt so lang wie die Vorderseite (KONTUNIEMI 1965:Abb. 7, 8). Innerer Sporn der Hinterschiene kaum länger als die Tibienspitze. Klaue (auf der Rückenseite etwas konkav) mit langem grossem Zahn (KONTUNIEMI 1965:Abb. 1). Körperlänge 4—5 mm. — Schwarz. Untergesicht, Tegulae, Bauch grösstenteils, Abdominalspitze und Beine gelb. Stigma blass. Hinter den Augen ein grosser rotbrauner Fleck.

♂. Gleicht dem ♀. Fühler von Körperlänge. Tergit 8 am Ende schwach vorgezogen, mit flachen Gruben und langdreieckigem Rückenkiel. Tergite am Hinterrande und Abdominalspitze bisweilen hell. Penisvalve (KONTUNIEMI 1965:Abb. 2).

P. dentatus wurde von LINDQVIST (1937:132) aus Finnland beschrieben.

Sehr nahe *dentatus* steht *gregarius* Marlatt aus Nordamerika mit fast gleich gebauten Klauen und gleicher Säge (WONG 1967:1101). Die Larven skelettieren *Salix*-Blätter in ähnlicher Weise wie *dentatus*.

Verbreitung: N: Helsingfors: Munksnäs, Drumsö, Sibbo (Lindqvist), Helsing (Hellén). St: Lavia (Winter). Ta: Hattula (v. Essen, Nuorteva), Lammi (Kontuniemi), Nokia (Hellén). Sa: Ruokolahti, Rantasalmi (Hellén). Kl: Parikkala (I. Hellén, Hellén). Ok: Suomussalmi (Sorsakoski). Lkem: Pelkosenniemi (Frey).

P. rumicis Linné, 1758

♀. Kopf hinter den Augen schwach verengert, glänzend, kaum punktiert. Clypeus tief rundlich ausgerandet. Fühler kurz, von Hinterleibslänge, zur Spitze nicht verschmälert, Glied 3 so lang wie 4. Augen klein. Scheitel um die Hälfte breiter als lang. Stirnfeld deutlich, nicht scharf begrenzt. Supraantennalgrube lang. Mesonotum zerstreut punktiert. Stigma schmal, dreimal so lang wie breit. Sägescheide dick, fast parallelseitig, am Ende zugespitzt, dreimal so breit wie die Cerci. Säge in der Endhälfte mit 6—7 groben Zähnen (BENSON 1963:Abb. 4). Körperlänge 4—5 mm. — Gelb. Schwarz sind: Stirn-Scheitelfleck, Hinterkopf, Propleuren, Hinterleibsrücken und Basis der Hüften. Flügel gelblich. Häufig ist eine Form mit ganz schwarzem Thorax und Hinterleib (ab *lugens* Ensli.), Selten ist der ganze Körper gelb (ab *lucens* Ensli.).

♂. Fühler zur Mitte des Hinterleibs reichend. Tergit 8 mit schmalem kaum über das Segment reichendem Mittelkiel.

Penisvalve distal ohne Einbuchtung, mit kurzem Griffel (BENSON 1958 a:Abb. 798). — Körper gelb mit \pm schwarzem Hinterleibsrücken. Thorax selten schwarz gefleckt.

P. rumicis wurde aus Finnland von FORSIUS (1919:15) gemeldet.

Verbreitung: Über das ganze Gebiet verbreitet und nicht selten. — Nord- und Mitteleuropa, Italien, Sibirien, Alaska, Canada.

P. pumilio Konow, 1904

♀. Kopf hinter den Augen stark ver-schmälert, glänzend, undeutlich punk-tiert. Clypeus tief ausgerandet. Fühler fadenförmig, so lang wie der Hinterleib; Glied 3 so lang wie 4. Scheitel etwa dop-pelt so breit wie lang. Stirnfeld undeut-lich begrenzt. Supraantennalgrube fur-chenförmig. Mesonotum ziemlich glän-zend, fein punktiert. Mesopleuren glatt und glänzend. Stigma 2.5mal so lang wie breit. Sägescheide kurz, kaum länger als und doppelt so breit wie die Cerci, zum Ende verschmälert. Längerer Sporn der Hinterschiene bis zur Mitte des Me-tatarsus reichend. Klauen mit sehr klei-nem Zahn. Körperlänge 3.5—4.0 mm. — Rötlichgelb. Stirn-Scheitelfleck braun. Drei Striemen des Mesonotums und der Hinterleibsrücken bräunlich. Fühler unten gelb. Flügeladerung und Stigma gelblich.

♂. Gleicht dem ♀. Tergit 8 mit gros-sen flachen Gruben und linearem Mittel-kiel, am Ende dreieckig vorgezogen.

P. pumilio wurde aus Finnland von HUKKINEN (1921:209) gemeldet.

Verbreitung: N: Munksnäs (Lindqvist). Ta: Hämeenlinna, Kuhmalahti, Kuhmoinen (Hukki-nen). Tb: Jyväskylä (Hukkinen). Sb: Kuopio (Nauha). Om: Jakobstad (Storå). — USSR: Ka: Viborg, Estland, Lettland, Moskau. Deutschland: Mecklenburg.

P. laevigatus Zaddach, 1882

♀. Kopf hinter den Augen nicht ver-engert, glänzend, zerstreut punktiert. Clypeus flach ausgerandet. Fühler etwas länger als der Hinterleib; Glied 3 kürzer

als 4. Scheitel über doppelt so breit wie lang. Stirnfeld scharf begrenzt. Supra-antennalfurche klein und rund. Mesono-tum und Mesopleuren glatt, kaum punktiert. Sägescheide dick, kürzer als die Cerci, am Ende zugerundet. Hinter-schiene lang, fast doppelt so lang wie der Tarsus; längerer Sporn 2/5 der Länge des Metatarsus. Körperlänge 5.5 mm. — Kopf gelb, mit grossem Stirn-Scheitelfleck. Fühler schwarz. Thorax gelb; drei breite Striemen des Mesono-tums, Schildchenspitze und Mesosternum schwarz. Hinterleib schwarz, Spitze und Bauch gelb. Costa und Stigma blassgelb. Beine gelb mit teilweise schwärzlichen Hüften, schwarzer äusserster Basis der Schenkel, weisslichen Hinterschienen und verdunkelten Hintertarsen. — ♂ unbekannt.

P. laevigatus wurde aus Finnland von LINDQVIST (1955:94) gemeldet.

Verbreitung: N: Helsingfors: Brändö (Winter) 2 Exx., Juni 1954. — Schweiz: St Gorthard (Hellen). — Schweden. Deutschland.

P. arcticus Lindqvist, 1958

Mesoneura arctica Lindqvist, 1958.

Pachynematus incisus Lindqvist, 1970.

♀. Kopf hinter den Augen nicht ver-engert, dicht punktiert, matt. Clypeus sehr schwach ausgerandet. Fühler etwas länger als der Hinterleib; Glied 3 so lang wie 4. Stirnfeld gross, fast viereckig, undeutlich begrenzt. Supraantennalgrube breit und flach. Scheitel kaum doppelt so breit wie lang. Mesonotum schwach glänzend, fein und dicht punktiert. Me-sopleuren glänzend, fein zerstreut punk-tiert. Sägescheide kurz, dreimal so breit wie die Cerci, am Ende abgestutzt. Säge (LINDQVIST 1970:Abb. 7). Inneren Sporn der Hinterschiene so lang wie die Breite des Schienenendes. Klauenzahn ziemlich gross. Körperlänge 5 mm. — Schwarz. Mundteile und Beine gelb. Stigma bräun-lich.

♂. Gleicht dem ♀ in dem dicht punk-tierten matten Kopf, dem wenig breiten

Scheitel und dem fein punktierten Mesonotum. Penisvalve (LINDQVIST 1972 Abb. 19). Die Schenkel der Holotype sind grösstenteils schwärzlich.

P. arcticus wurde aus Finnland von LINDQVIST (1958:68) als *Mesoneura arctica* (♂) beschrieben. Einige Jahre später (1972:75) vereinigte er hiermit *Pachynematus incisus* Lindqv. (♀) aus Sibirien.

Verbreitung: *Le: Malla* (Frey). — Schottland. Sibirien.

P. parvilabris Thomson, 1871

P. inopinatus Lindqvist, 1949

P. abstrusus Lindqvist, 1949

P. punctifrons Malaise, 1921 syn.n.

P. acutiventris Hellén, 1948 syn.n.

P. glabriceps Lindqvist, 1949 syn.n.

♀. Kopf hinter den Augen kaum verengt. Clypeus normal ausgerandet. Fühler so lang wie der Hinterleib; Glied 3 und 4 gleichlang. Stirnfeld schwach begrenzt, bisweilen fast fehlend. Supraantennalgrube gross, den schwachen Stirnwulst ± durchbrechend. Scheitel fast dreimal so breit wie lang. Mesonotum und Mesopleuren glänzend, kaum merkbar punktiert. Stigma fast dreimal so lang wie breit. Sägescheide an der Basis etwa doppelt so breit wie die Cerci, zur Spitze verschmälert. Säge mit etwas aufstehenden Zähnen (die Säge der vorliegenden Holotype (Kälähög, Jtl.) stimmt mit der Abbildung bei LINDQVIST (1965:19) ziemlich gut überein). — Körperlänge 4—5 mm. Schwarz. Mundteile, Stigma und bisweilen auch Tegulae gelblich. Umgebung der Augen mitunter bräunlich. Beine gelb. Hüften und Schenkel ± schwärzlich.

♂. Gleicht dem ♀. Rückenkiel des 8. Tergits schmal, distal etwas breiter werdend. Färbung variabel wie beim Weibchen.

P. parvilabris wurde von LINDQVIST (1940:25) aus Finnland gemeldet.

P. subaequalis Först., von neueren Autoren mit *Amauronematus viduatus* Zett.

vereinigt, wurde von Conde (nach bezettelten Stücken in meiner Sammlung) mit *gehrsi* Knw synonymisiert, welche letzterwähnte mitteleuropäische Art u.a. durch fast kreisrunde Augen gekennzeichnet wird. Die aus Finnland von LINDQVIST (1939:48) als *subaequalis* angeführten Stücke gehören zu *parvilabris*.

P. punctifrons Mal. In seiner Beschreibung (MALAISE 1921:9) nennt der Autor kaum andere Unterschiede von *parvilabris* als die schmalere Sägescheide des ♀. Vorliegende fünf Typen beider Geschlechter (Torne Träsk, Malaise) gehören m.A.n. zu *parvilabris* Thoms. Aus Finnland wurde *punctifrons* von LINDQVIST (1937 b:149) erwähnt. Ein von ihm determiniertes Pärchen (*Le: Enontekiö:Karvonen*) gehört ebenfalls zu *parvilabris*.

P. acutiventris Hellén. Der Holotypus (*Le: Malla*, Hellén) kennzeichnet sich durch die ausgezogenen kompressen letzten Hinterleibssegmente und die lange Sägescheide, welche beide Merkmale von einem deformierten Hinterleib abhängen. Das Stück gehört zu *parvilabris*. Von dem von LINDQVIST (1965:21) beschriebenen ♂ von *acutiventris* habe ich den Allotypus (Schweden: *Lule Lpm.: Kvikkjokk*) gesehen. Er gehört ebenfalls zu *parvilabris*.

P. glabriceps Lqv. (1949:84) wurde vom Autor auf Grund eines einzigen ♀-Stückes beschrieben. Der vorliegende Holotypus (*Li: Utsjoki, Nuorteva*) unterscheidet sich nicht in den vom Autor erwähnten Merkmalen des Kopfes von *parvilabris*, und die abweichende Zahl der Sägezähne ist ja bei dieser Gattung kein zuverlässiges Merkmal (vgl. WEIFFENBACH 1962:135).

Verbreitung: In Lapland nicht selten. — USSR: Kola Halbinsel mehrerorts. — Schweden.

P. tenuiserra Lindqvist, 1949

P. albiventris Lindqvist, 1959 syn.n.

♀. Steht *parvilabris* Thoms. sehr nahe und nur durch relative Merkmale zu

unterscheiden. Der Kopf ist hinter den Augen etwas stärker verengert, die Supraantennalgrube oft grösser, das Stirnfeld meist deutlicher abgesetzt und der Klauenzahn länger. Die Sägezähne sind etwas niedriger (LINDQVIST 1965:Abb. 7). Körperlänge 4.0—5.0 mm. — Schwarz. Mundteile, Pronotumrand, Tegulae und Beine grösstenteils gelb. Fühler unten oft heller. Hinterleib am Ende nicht selten \pm rot. Bauch beim Holotypus braun, kann aber auch schwarz oder weisslich sein.

♂. Gleicht dem ♀. Klauenzahn kürzer. Penisvalve (LINDQVIST 1965:Abb. 25). — Körper oft noch heller als beim ♀, indem die rotgelbe Farbe sich noch am Ende und an den Seiten der letzten Tergite stark ausbreitet und auch das Schildchen rot sein kann.

P. tenuiserra wurde von LINDQVIST (1949:80) aus Finnland beschrieben.

P. albiventris Lqv. Der vorliegende Holotypus des aus Schweden (Finnmarken: Tana Bru, H. Andersson) beschriebenen ♀ (LINDQVIST 1958:70) weicht nur durch etwas schwächer begrenztes Stirnfeld und helleren Bauch von normalen *tenuiserra*-Stücken ab.

Verbreitung: In ganz Lappland nicht selten.

P. freyi Lindqvist, 1949

♀. Lässt sich von *parvilabris* Thoms. kaum anders als durch den Bau der Säge unterscheiden. Diese hat anstatt von 14—15 nur 6—7 deutliche Zähne (LINDQVIST 1949:Abb. 37). Der vorliegende Holotypus ist klein (4 mm) mit fast ganz gelben Beinen. Die Sägescheide ist an der Basis nur doppelt (nicht dreimal gemäss der Beschreibung) so breit wie die Cerci, und das 3. Fühlerglied ist so lang wie 4 (nicht kürzer).

♂. Ist nicht von *parvilabris* zu unterscheiden. Auch die Penisvalve (LINDQVIST 1965:Abb. 24) ist fast gleich.

P. freyi wurde von LINDQVIST (1949:81) u.a. aus Finnland beschrieben.

BENSON (1963:163) hat eine kurze Beschreibung von *freyi* nebst Abbildung der Säge (Fig. 1) gegeben. Dieses Sägebild weicht aber beträchtlich von der Abbildung LINDQVISTS (1949:81) ab, so dass wir hier vermutlich mit zwei verschiedenen Arten zu tun haben. Bensons Bild stimmt sehr gut mit einem Stück einer mir aus Sibirien: Baikargebiet (Wershutsky 18/7 70) vorliegenden Art überein, die wahrscheinlich neu ist. BENSON'S (1962:406) Behauptung von *freyi* als eine holarktische Art ist darum kaum richtig.

Verbreitung: *Li*: Utsjoki (Frey, Lindqvist).

P. excisus Thomson, 1871

♀. Kopf hinter den Augen kaum verengert, wenig glänzend. Clypeus tief ausgerandet. Fühler so lang wie der Hinterleib; Glied 3 kaum kürzer als 4. Stirnfeld schwach begrenzt. Supraantennalgrube oval, den unteren Stirnwulst nicht berührend. Scheitel dreimal so breit wie lang. Mesonotum wenig glänzend mit schwacher Mittelfurche. Mesopleuren matt, fein dicht runzlig. Sägescheide doppelt so dick wie die Cerci, distal verschmälert und am Ende kaum abgerundet. Säge mit etwas aufstehenden, spitzen Zähnen, etwa wie bei *parvilabris* (vgl. LINDQVIST 1965:Abb. 5). Stigma doppelt so lang wie breit. Hinterschienen etwas länger als die Schenkel; längerer Sporn fast die Mitte des Metatarsus erreichend. Klauen kurz und dick mit grossem, langem Zahn. Körperlänge 4.5—5.0 mm. — Schwarz. Mundteile gelb. Kopf hinter den Augen mit grossem roten Fleck. Stigma bräunlich. Beine gelb; Schenkel \pm schwärzlich.

♂. Gleicht dem Weibchen. Tergit 8 am Ende fast gerade abgestutzt, mit schwachem Rückenkiel.

P. excisus wurde von LINDQVIST (1938:81) aus Finnland gemeldet, ist aber auch schon früher (1919:15) von

FORSIUS als *Lygaeonematus strandi* Knw (*excisus* Thoms. sensu Lindqvist) erwähnt.

Verbreitung: *Ta*: Hattula (Nuorteva). *Tb*: Pihitipudas (Lindqvist). *Oa*: Nivala, Bergö (Hellén). *Ks*: Salla (Y. Kangas) *Le*: Enontekis (Hk. Lindb.), Kilpisjärvi (Karvonen, Nordman, Hellén), Malla (Hellén). *Li*: Ivalo (Karvonen), Utsjoki (Lindqvist, Hellén). — USSR: *Lps*: Petsamo (Hk. Lindb.), Yläluostari, Pummanki (Karvonen).

P. mollis Hartig, 1837

P. kontkaneni Lindqvist, 1960.

♀. Kopf hinter den Augen verengert, stark und deutlich punktiert. Clypeus kaum ausgerandet. Fühler von Hinterleibslänge; Glied 3 und 4 gleichlang. Stirnfeld deutlich begrenzt. Scheitel 2.5 mal so breit wie lang. Mesonotum fein zerstreut punktiert, etwas glänzend. Mesopleuren matt, dicht runzlig punktiert. Sägescheide kurz, am Ende gerundet, so lang wie und etwa doppelt so breit wie die Cerci. Säge mit voneinander entfernt aufrechtstehenden kleinen, spitzen Zähnen (LINDQVIST 1960:Abb. 3 (kontkaneni)). Längerer Sporn der Hinterschienen so lang wie das Schienenende. Körperlänge 5—6 mm. — Schwarz. Oberlippe, Pronotumrand und Tegulae gelb. Stigma bräunlich. Beine gelb. Schenkel ± schwärzlich. Hinterschienen an der Spitze und Hintertarsen dunkel. Selten sind die Beine ganz gelb.

♂. Gleicht dem ♀. Grübchen des 8. Tergits wenig tief; Rückenkiel schmal. Penisvalve (BENSON 1958 a:Abb. 468).

Lygaeonematus mollis wurde aus Finland von FORSIUS (1919:15) gemeldet.

Pachynematus kontkaneni Lqv. 1960: 35 aus Finnland beschrieben, wurde vom Autor (LINDQVIST 1967:126) als Synonym von *Lygaeonematus mollis* einge-zogen.

Verbreitung: Über das ganze Gebiet bis zum nördlichsten Lappland verbreitet und sehr häufig. — Nord- und Mitteleuropa. Sibirien.

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Litteratur

KAESTNER, ALFRED 1973: *Lehrbuch der Speziellen Zoologie. Band I: Wirbellose. 3. Teil. Insecta: B. Spezieller Teil.* S. 273—907, 405 Abb. — Jena, Gustav Fischer. Pris 35:— M.

År 1972 utkom den allmänna delen av insektbandet i KAESTNERS zoologilärobok och den har nu följts av en mycket omfattande och detaljrik systematisk del som med välvalda exempel belyser de »ungefär 780.090 tillsvidare kända arternas» biologi, ekologi och ontogeni och inte heller lämnar morfologin obeaktad. Alla de 33 ordningarna, som insekterna i verket är uppdelade i, är utförligt behandlade och det är även de viktigaste familjerna, speciellt sådana som förekommer i Mellaneuropa. En speciell vikt har lagts vid de insekter som har direkt ekonomisk betydelse för människan.

Boken kallas lärobok, men jag har svårt att föreställa mig för vem den kan vara ämnad att vara en bok som skulle tjäna som bas för inläring, så omfattande och detaljerade kunskaper i entomologi som ingår i boken kommer åtminstone i de finländska universiteten inte i fråga på något stadium men boken kan som ett ypperligt uppslagsverk rekommenderas för alla med speciellt intresse för entomologi och det facila priset gör ju inte heller verket oåtkomligt för privatpersoner.

Martin Meinander

Chromosomal evolution in the Psocoptera

Martin Meinander, Olli Halkka and
Veronica Söderlund

Abstract

MEINANDER, M., HALKKA, O. & SÖDERLUND, V.: Chromosomal evolution in the Psocoptera. — Notulae Entomol. 54:81—84. 1974.

The chromosome number was determined in 11 species of Psocoptera, from one family of the Trogiomorpha and five of the Psocomorpha. Earlier results indicating that the modal number of chromosomes in this order is $n = 9$ were confirmed. The cytogenetics of the order is consistent with morphological studies suggesting greater uniformity in the Psocomorpha than in Trogiomorpha. Within the Psocomorpha, chromosome studies suggest that the Stenopsocidae should be accorded the status of a separate family, instead of being regarded as a subfamily of the Caeciliidae.

The relationships of the Psocoptera with the Phthiraptera and the Hemiptera are discussed in terms of comparative cytology and cytogenetics.

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Introduction

The cytogenetics of the superorder Psocoidea has received surprisingly little attention during the more than 60 years which have elapsed since the publication of BORING's (1913) report on the chromosomes of *Cerastipsocus*. The order Psocoptera is known to contain well over 1,600 species (see MOCKFORD 1971), yet only 21 species have been investigated cytologically thus far (BORING 1913, GOSS 1954, WONG & THORNTON 1966).

ROESLER (1944) and BADONNEL (1951) divided the order Psocoptera into three suborders: Trogiomorpha, Troctomorpha and Psocomorpha. This division is supported by several morphological investigations, the most recent by SMITHERS (1972), who shows that the taxonomic groups which ROESLER and BADONNEL called suborders represent monophyletic entities. He reclassifies the

order in a cladistic system with sister groups, a method involving numerous systematic categories. Although this system shows the author's opinion of the evolutionary history of the group, the use of a multitude of taxonomic categories is very impractical. Because of its plainness, the conventional system, with the genera grouped in families based on relative morphological similarities, is adopted in the present study.

Here, the chromosomes are described for eleven species of Psocoptera. One of these species belongs to the Trogiomorpha, the others to five different families of the Psocomorpha.

Acknowledgements. We are grateful to Mrs. Riitta Hovinen for technical aid in many phases of the work, and to Mrs. Jean Margaret Perttunen, B.Sc. (Hons.) for checking the English of the manuscript.

The study has been aided by grants from the University of Helsinki and from the National

Research Council of Sciences, of the Academy of Finland.

Material and methods

Adults and nymphs of Psocids were collected in 1968 from Espoo, in 1971 from Tvärminne, both in southern Finland, and in 1972 from Lemland on the Åland Islands.

The insects were fixed in acetic alcohol (1:3) and stained with the Feulgen method. Most of them were sectioned, at 15 μ , after paraffin embedding, but a few squashes were also made. All the slides are stored as permanent preparations.

Spermatogenesis was investigated in five and oogenesis in six species.

Results

The present material confirms WONG & THORNTON's (1966) observation that the chromosome number in the suborder Psocomorpha is fairly constantly $n = 9$. Two of the species studied deviate from the general pattern (Table 1). *Metylophorus nebulosus* has $n = 8$, which is evidently the result of a fusion, one of the eight chromosomes being distinctly larger than the others (the end view of this long chromosome is seen in Fig. 1 in the centre of the group of 7 autosomal bivalents). In the species with 9 chromosomes, the chromosomes are more uniform in size. In *Stenopsocus lachlani* the number $n = 12$ was found. This is the first record on the chromosomes of a species belonging to the Stenopsocidae. This family is related to the Caeciliidae, with which it has several morphological characters in common. If the number 12 proves to be common or perhaps constant within the Stenopsocidae, this would provide strong support for the

view that this group should be kept as a separate family.

The suborder Psocomorpha is considered morphologically not only more uniform than the Trogiomorpha and the Troctomorpha but also more specialized. This opinion is well substantiated by cytological studies, including ours (Table 1). Chromosome numbers in the Trogiomorpha and Troctomorpha have been studied in only seven species, but in both suborders the numbers vary within wide limits. Evolutionary hypotheses based on karyology cannot be formulated until a larger number of species have been investigated.

It is noteworthy that the chromosome number of the obligatory parthenogenetic species *Caecilius flavidus* does not deviate from the modal number for the suborder. The only previously studied karyotype of a parthenogenetic psocid is that of *Liposcelis bostrychophilus*, belonging to Liposcelidae of the suborder Troctomorpha, where the chromosome number was $2n = 18$ (Goss 1954).

The mode of sex determination in the Psocoptera appears quite uniform. The male is the heterogametic sex, and in all the species in which spermatogenesis has been investigated a univalent X chromosome has been observed. At the reduction division, the sex univalent is usually situated at the periphery of the metaphase plate (*E. westwoodi*, *E. abdominalis*, *M. nebulosus*, *L. picicornis* and *S. lachlani* in Fig. 1).

A peripheral position of the univalent X chromosome is also typical of the Homoptera Auchenorrhyncha, with which the Psocoptera seem to have much in common in the general mode of spermatogenesis. The chromosomes of the Psocoptera studied by us are smaller, however, than those of most species of the Auchenorrhynchos Homoptera.

The smallness of the chromosomes of the Psocoptera makes it rather difficult

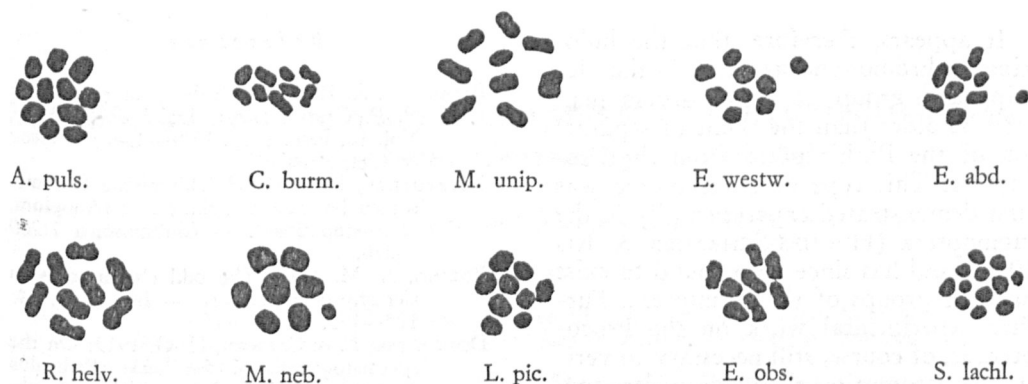


FIG. 1. Meiotic metaphases in 10 species of Psocoptera. For abbreviations of specific names, see Table 1. In the metaphases from males, *E. westw.*, *E. abd.*, *M. neb.*, *L. pic.* and *S. lachl.*, the univalent X chromosome is on the right.

TABLE 1. Haploid chromosome numbers in 11 species of Psocoptera.

species	n
TROGIOMORPHA	
Atropidae	
<i>Atropos pulsatorium</i> L.	11 (♀)
PSOCOMORPHA	
Caeciliidae	
<i>Caecilius flavidus</i> Steph.	9 (♀)
<i>C. burmeisteri</i> Br.	9 (♀)
Mesopsocidae	
<i>Mesopsocus unipunctatus</i> Müll.	9 (♀)
Elipsocidae	
<i>Elipsocus westwoodi</i> Mcl.	9 (♂)
<i>E. abdominalis</i> Reut.	9 (♂)
<i>Reuterella helvimacula</i> End.	9 (♀)
Psocidae	
<i>Metylophorus nebulosus</i> St.	8 (♂)
<i>Loensia picicornis</i> St.	9 (♂)
<i>Enderleinella obsoleta</i> St.	9 (♀)
Stenopsocidae	
<i>Stenopsocus lachlani</i> Kolbe	12 (♂)

to observe the structure of the centromere (kinetochore) in this group. At no stages of mitosis or meiosis are constrictions resembling a localized centromere present in the chromosomes of the spe-

cies investigated by us. The long chromosomes, particularly the large chromosome of *M. nebulosus*, can be seen to orientate at mitosis with their sides towards the poles, but at the reduction division with their ends in that position. As far as we can see, it appears likely that chromosomes of Psocoptera are holokinetetic. A number of roentgen irradiation experiments performed by us have shown that the chromosomes of this group are highly resistant to breakage, an observation which further supports the assumption that the chromosomes may be holokinetetic.

Discussion

The Psocoptera is an insect order more or less unanimously considered to belong to the Hemipteroid group of insect orders, with Phthiraptera as its nearest relatives. In this latter order, BAYREUTHER (1955) has shown by roentgen irradiation experiments that the chromosomes of the Anoplura are holokinetetic. The spermatogenesis of the Mallophaga has been found by SCHOLL (1955) to be very like that of the Anoplura.

It appears, therefore, that the holokinetic chromosome structure in the Hemipteroid group of insect orders may well be older than the point of separation of the Phthiraptera from the Psocoptera. This type of chromosome was first demonstrated experimentally in the Homoptera (HUGHES-SCHRADER & RIS 1941), and has since been found to exist in other groups of the Hemiptera. Further experimental work on the Psocoptera is, of course, still necessary to verify the assumption that this order, too, has holokinetic chromosomes.

The general mode of spermatogenesis is not uniform within the Hemipteroid group of orders. In the Phthiraptera Anoplura, meiosis is highly peculiar (DONCASTER & CANNON 1919, HINDLE & PONTECORVO 1942, BAYREUTER 1955). In the bisexual Homoptera and in the Heteroptera, the course of the meiotic divisions is quite normal, with minor exceptions.

BORING (1913), the first student of Psocopteran chromosomes, stated that »the spermatogenesis falls in line with that of many insects in other orders». This statement has been largely corroborated by our observations. In the general mode of meiosis, the Psocoptera thus seem to be nearer to the Hemiptera than to the Phthiraptera. This does not mean that the mode of meiosis is uniform in all the species, and in fact aberrant features were observed in two of those investigated by us.

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The life cycle and alary dimorphism of *Gerris lacustris* (L.) (Heteroptera, Gerridae) in Poland

Kari Vepsäläinen and Stanisław Krajewski

Abstract

VEPSÄLÄINEN, K. & KRAJEWSKI, S.: The life cycle and alary dimorphism of *Gerris lacustris* (L.) (Heteroptera, Gerridae) in Poland. — Notulae Entomol. 54:85—89, 1974.

Gerris lacustris is bivoltine in Poland. The overwintering generation is predominantly long-winged, only a minor part being short-winged. The first generation (mid summer offspring of overwintered individuals) is largely short-winged, but mature long-winged imagos are also frequent. Accordingly, the reproducing mid summer generation shows alary dimorphism sensu stricto. Imagos which moult after mid July enter diapause and are not able to reproduce before the following spring. Non-diapause individuals die before the winter.

The results are discussed in the light of earlier knowledge of Finnish and Hungarian pondskaters. The differences between localities in mid summer morph ratios are explained to result from differences in the temperature during larval development. The temperature acts together with daylength, which operates the switch mechanism for diapause, and causes also the difference in alary morph ratios between the mid summer and overwintering generations. Variation in wing length forms a flexible adaptive system in inhabitants of more or less changing environments; both the temporal and spatial variation of the habitat must be taken into account in studies of pondskaters.

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Introduction

Many pondskater species of the genus *Gerris* F. inhabit temporary or only semi-permanent waters, their environments changing to a greater or lesser degree with the course of time. At its most acute, short-term temporal variation may result in the rapid drying up of a pond. Since no pondskater is able to live in a dried-up pond, the crucial problem for species of temporary habitats is how to utilize the pond effectively when it exists, and how to leave it before it dries up.

It has recently been shown (VEPSÄLÄINEN 1974b) that the species-specific strategies of *Gerris* are very flexible and closely correlated to the degree of insta-

bility of the environment (see further LEVINS 1968). Seasonal variation of wing length and flight ability combined with a certain pattern of diapause behaviour are the main means of adaption.

G. lacustris is predominantly an inhabitant of more or less permanent waters, but it also utilizes temporary habitats, especially south of Finland. From north to south, the species shows a shift from genetically determined alary dimorphism to mainly environmentally determined dimorphism. This shift is accompanied by a change from \pm permanent habitats to a broader habitat range (including temporary habitats) and by a change from univoltine to multivoltine populations (VEPSÄLÄINEN 1974a, 1974b, 1974c). Accordingly, the

species is especially suitable for studies of adaptive strategies in changing environments.

VEPSÄLÄINEN (1974b) used the fitness set approach (see LEVINS 1968) when examining the adaptive significance of alary dimorphism for pondskaters. Although the results appear to be intuitively pleasing, attempts to determine population-specific fitness sets and adaptive functions are still lacking. The present contribution gives data on the relation between the life-cycle and alary dimorphism of *G. lacustris* in Poland, i.e. in a region situated between the previously explored Finnish and Hungarian populations. Later our intention is to present information on the environmental heterogeneity of pondskater populations in different parts of Europe, to facilitate a more formal and precise treatment of the adaptive strategies of some *Gerris* species.

Material and methods

The material was collected in the years 1960—1965 from the River Grabia and its inundation area. The sampling sites are situated along the river between the headwaters and the mouth (see KRAJEWSKI 1969, the Figure). Accordingly, there are great differences in habitats between the sites, and the results give a general picture for the whole region. Collecting was done with a pond net to obtain a reasonably large sample. The specimens were preserved in ca. 70 % alcohol.

The relative wing lengths were determined (see VEPSÄLÄINEN 1974b). In addition, the ventral colouration was noted and the stage of maturation was checked by dissection in the females. Random checks of the functional stage of the indirect flight muscles and the colour of the meso-alinotum were made. The criteria used were the same as in VEPSÄLÄINEN (1974a).

Results

In early and late summer the long-winged morph (LW) is dominant in

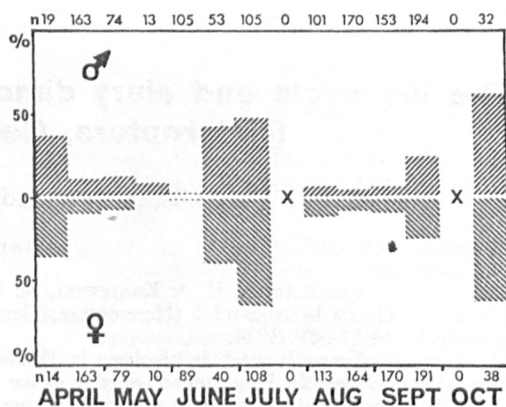


FIG. 1. Seasonal changes in the proportions of brachypters (hatched) and macropters (white) of *G. lacustris* males (above) and females (below) in the River Grabia and its inundation area. Sample sizes (n) are given for each half month period. X = no observations. Earliest sample 8. IV, latest sample 5. XI.

Polish *G. lacustris* populations. In mid summer, from late June to mid or late July, there is a marked peak of short-winged (SW) individuals (Fig. 1). The peak is due to first-generation imagos, which are ready to produce the second generation without an intervening diapause. The reproducing first-generation females, the majority of which are short-winged, are almost all light-ventered (both thoracic and abdominal venter light-coloured). However, a few individuals apparently belonging to this generation are dark below and yet have fully mature eggs (e.g. 1 SW ♀ of type E of ANDERSEN (1973) taken on 1. VII, and 1 SW ♀, intermediate between types D and C of ANDERSEN, taken on 20. VIII) (Fig. 2). The light-ventered females are relatively short-lived and all die before winter. The second, overwintering, generation is dark-ventered and predominantly long-winged. These imagos undergo diapause, and do not lay eggs before overwintering.

Examination of the functional stage of the indirect flight muscles revealed

that in the overwintered long-winged females they are histolyzed by the time reproduction is commenced. Mid summer, light-ventered, short-winged females do not develop functional flight muscles at all, but the flight muscles of mid-summer, light-ventered, long-winged females grow functional during a teneral period of probably a week or less. Individuals which had almost completely hardened chitin and partially developed colouration of the meso-alinotum (the outline of the pattern could be traced but the colour of the patches was still brown, not black) had longitudinal indirect flight muscle fibres with a diameter of 30 to 60 μm . One female, which was almost completely hardened, but still showed an almost totally unig-

mented meso-alinotum, had fibres with a diameter of 20 μm or more. In this individual the muscle fibrils were 1.3–1.4 μm and the surface was still heavily corrugated. Accordingly, the last-mentioned individual was at the beginning of its teneral development, but at least some of the previous ones had attained flight ability (cf. ANDERSEN 1973).

Discussion

The Polish material of *G. lacustris* accords with the previous knowledge of this species. In Finland, where the species is mostly univoltine, a cline is found in wing length, the frequency of the

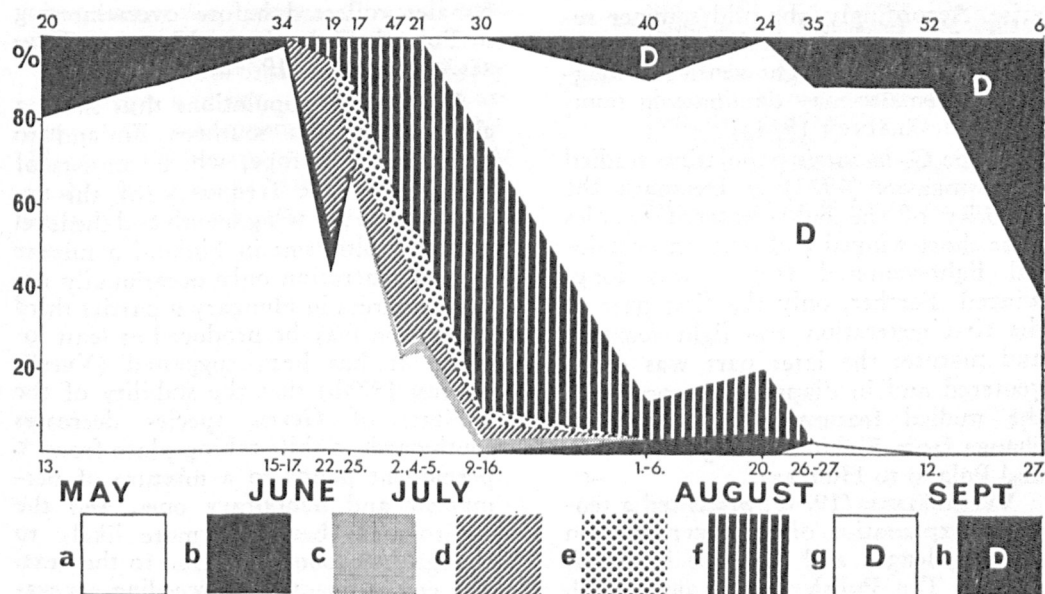


FIG. 2. Seasonal changes in the proportions of the different female forms of *G. lacustris* in the River Grabia and its inundation area. The number of specimens per time period indicated above. a) hard chitin, dark thoracic venter, eggs, macropter; b) hard chitin, dark thoracic venter, eggs, brachypter; c) soft chitin, pale thoracic venter, maturing or mature eggs, macropter; d) soft chitin, pale thoracic venter, maturing or mature eggs, brachypter; e) hard chitin, pale thoracic venter, eggs, macropter; f) hard chitin, pale thoracic venter, eggs, brachypter; g) either soft or hard chitin, dark thoracic venter, immature, macropter; h) either soft or hard chitin, dark thoracic venter, immature, brachypter. The one female in group c) on 2. VII was immature.

short-winged morph decreasing from north to south. In southern Finland the proportion of short-winged individuals is much the same as in Poland in the overwintering generation. In southernmost Finland in warm summers a small second generation may occur locally, and a few light-ventered mature females have been encountered, but their frequency never reaches levels comparable to those in Poland. The biological effect of this morph on the Finnish populations appears to be potential rather than realized (VEPSÄLÄINEN 1974b).

In Hungary the overwintered generation is also mostly long-winged. The mid summer light-ventered imagoes are both short- and long-winged, and the females of both alary morphs lay eggs from which the second generation will arise. Accordingly, the mid summer reproducing generation is dimorphic *sensu stricto*, and the light-ventered long-winged females may dominate in numbers (VEPSÄLÄINEN 1974a).

In the *G. lacustris* population studied by ANDERSEN (1973) in Denmark the majority of the light-ventered females were short-winged and only an occasional light-ventered female was long-winged. Further, only the first part of the first generation was light-ventered and mature; the later part was dark-ventered and in diapause. Accordingly, the studied features show a gradual change from Finland through Denmark and Poland to Hungary.

VEPSÄLÄINEN (1974c) presented a tentative explanation of the determination of wing length and diapause in *Gerris* species. The Polish results agree with this hypothesis, according to which the non-diapause light-ventered imagoes result from increasing daylength during larval development. All larvae which undergo their fourth instar development after the summer solstice in nature will enter diapause. The wing length is de-

termined by temperature: especially high temperatures induce the development of long-winged imagoes instead of short-winged ones in mid summer. The effect of temperature depends upon the daylength and the genotype of the individual. The gene for short wings is dominant, and the photoperiod and temperature switch is assumed to be mainly effective in the recessive homozygote. However, when reared in the laboratory at ca. 25°C individuals with a dominant gene for short-wingedness had more long-winged offspring than might be expected on the basis of simple Mendelian segregation. Offspring obtained from laboratory rearings have all been dark-ventered even when mature (VEPSÄLÄINEN 1974c), thus resembling the few exceptional dark-ventered, mature females collected before overwintering in Poland, Finland and Hungary (VEPSÄLÄINEN 1974a, 1974b, this paper).

G. lacustris populations thus show a clear cline from southern Finland to southeastern Europe, which consists of increases in the frequency of the recessive gene for wing length and the level of multivoltinism: in Finland a minute second generation only occasionally occurs, whereas in Hungary a partial third generation may be produced at least locally. It has been suggested (VEPSÄLÄINEN 1974b) that the stability of the habitats of *Gerris* species decreases southwards, a shift taking place from \pm permanent ponds to a mixture of permanent and temporary ones, and the environment becoming more likely to change from one generation to the next. The environments of succeeding generations hence become more poorly auto-correlated. The genetically switched alary dimorphism of the univoltine Finnish populations does not allow a suitable response to short-term fluctuations, and the adaptive strategy of more southern populations must be built on

environmental switches. In areas where the continued existence of ponds from one year to another is uncertain but the risk of drying up during the short reproductive season is minute, the minimum-time strategy of short wings is favoured by natural selection. Short-winged females are able to proceed directly to egg-building and egg-laying without the time- and energy-consuming building of flight muscles (ANDERSEN 1973). In regions with long and warm summers the short-term variation of *Gerris* habitats is enhanced, and a combination of minimum-time strategy and the ability to colonize new habitats between every generation is favoured. In *G. thoracicus*, a species of small ponds, the multivoltine Hungarian and Austrian populations are long-winged throughout the year (VEPSÄLÄINEN 1974a).

Environmental instability is not easy to measure and cannot be properly assessed on macroclimatic data alone. Hence our impressions of *Gerris* habitats in different regions have had to be based on personal experience obtained during

collecting. However, measurements are now being performed in the field and will later be compared with life-cycle data.

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Coleoptera from North-East Africa. Chrysomelidae: Chrysomelinae

Contribution to the study of Chrysomelidae 4 (Zoological contribution from the Finnish expeditions to the Sudan No. 38)

Mauro Daccordi

Abstract

DACCORDI, MAURO: Coleoptera from North-East Africa. Chrysomelidae: Chrysomelinae. — Notulae Entomol. 54:90. 1974.

A list is given of finds of 17 species collected by the Finnish expeditions to the Sudan, Ethiopia and Somalia.

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This note refers to the Chrysomelidae (only Chrysomelinae) collected by Dr. R. Linnavuori in the Sudan and Ethiopia in 1960—1963. The material comprises 40 specimens of seven species and is deposited in the Entomological Department of the Zoological Museum, Helsingfors (some specimens retained in my collection).

I wish to thank Mr. Hans Silfverberg, who kindly entrusted the study of this material to me.

Sphaeratrix latifrons Gistel (*Monardita opulenta* Rche)

Ethiopia: Agheresalam, 7. VI. 63, 1 ex.; Belleta forest, 13—14. VI. 63, 1 ex.

Chrysolina superba ssp. *limbolata* Rche

Ethiopia: Gembi nr. Agaro, 15. VI. 63, 1 ex.; Agheresalam, 7. VI. 63, 3 exx.; Belleta forest, 13—14. VI. 63, 7 exx. (2 exx. retained in my collection); Adigrat, 31. V. 63, 1 ex.

Chrysolina plagidorsis Ach.

Sudan: Equatoria, Imatong Mts. nr. Gilo, 18, 24. III. 63, 3 exx. (1 ex. in my collection).

Ceralces ferrugineus Gerst.

Sudan: Equatoria, Opari Magwe, 13. III. 63, 1 ex.

Phaedonia circumcincta ssp. *imposita* Gerst.

Somalia: Hargeisa, Berbera, 25, 27. VI. 63, 1 ex.

Ethiopia: Belleta forest, 13, 14. VI. 63, 2 exx.; nr. Lake Zuai, 6. VI. 63, 5 exx.; Gembi nr. Agaro, 15. VI. 63, 1 ex.; Machi, 9. VI. 63, 6 exx. (1 ex. in my collection); Sululta, 11. VI. 63, 1 ex.

Sudan: Equatoria, Opari-Magwe, 13. III. 63, 1 ex.; Equatoria, Imatong Mts. nr. Gilo, 18, 24. III. 63, 2 exx.

Mesoplatus ochroptera Stål

Sudan: Blue Nile, Ingessana Mts. 17, 22. XI. 62, 1 ex.; Equatoria, Nimula, 11, 13. III. 63, 1 ex.

Centroscelis murrayi Baly

Sudan: Equatoria, Lotti forest, 14, 17. III. 63, 2 exx. (1 ex. in my collection).

A new species of *Gnorimoschema* Busck from Northern Europe (Lepidoptera, Gelechiidae)

Ole Karsholt and Ebbe Schmidt Nielsen

Abstract

KARSHOLT, OLE & SCHMIDT NIELSEN, EBBE: A new species of *Gnorimoschema* Busck from Northern Europe (Lepidoptera, Gelechiidae). — Notulae Entomol. 54:91—96. 1974.

Gnorimoschema bodillum sp.n. is described, and *G. antiquum* Pov. is stated as a new synonym of *G. soffneri* Riedl. Notes are given concerning larva, pupa and biology of *G. bodillum* sp.n.

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Introduction

In the Gelechiid genus *Gnorimoschema* Busck eight described Palaearctic species are known at present. They are, partly according to POVOLNY (1966):

- G. strelicellum* (Herrich-Schäffer)
- G. mongolorum* Povolny
- G. valesiellum* (Staudinger), syn.: *diabolicellum* (M. Hering) and *hackmani* (v. Schantz)
- G. robustellum* (Staudinger)
- G. nordlandicolellum* (Strand), syn.: *fennicellum* (Hackman)
- G. epithymellum* (Staudinger), syn.: *brunneomaculellum* (Hackman)
- G. soffneri* (Riedl), syn.: *antiquum* Povolny (n. syn.). Both the holotype of *Lerupsia soffneri* Riedl and a paratype of *Gnorimoschema antiquum* Pov. were caught by J. Soffner at Nes-sebar in Bulgaria, and the schematic drawing of the male genitalia by RIEDL (1965) agrees fully with POVOLNY's drawing (1966).

All these species with the exception of three (*mongolorum* Pov., *robustellum* Stgr. and *soffneri* Riedl) are known from the Scandinavian countries.

The *Gnorimoschema*-species vary much in appearance and also the genitalia can show variation. Several of the species occur sparsely and rarely, and have an inclination to make subspecies.

G. epithymellum ssp. *brunneomaculellum* Hackm. is for instance only half as large as the typeform from Spain and differently coloured too.

In this periodical Scandinavian *Gnorimoschema*-species have previously been dealt with by HERING (1924), HACKMAN (1946, 1960) and v. SCHANTZ (1952). Here a further species of Northern Europe will be described under the name *Gnorimoschema bodillum* n.sp.

Description of imago

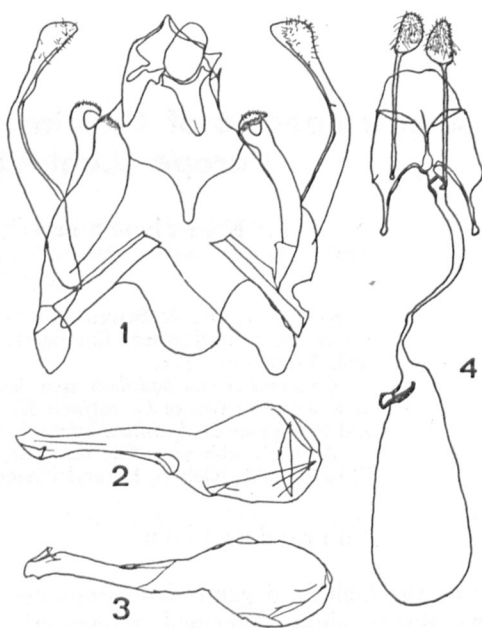
Imago Fig. 9. Face white, crown yellowish-brown to greyish-brown, tegula and front part of thorax darker greyish-brown, collar and back part of thorax lighter brown to yellow-whitish. Second joint of palpi as the face; terminal joint shorter than the second, at the base yellow-whitish; proximal part with a white ring, distal part of the joint dark brown, sometimes with a few white scales in the tip. Ground colour of forewings dark greyish-brown, but in fresh specimens almost covered with whitish, grey and ochreous scales. The white scales dominate at the costa,

at the bases for the inner and outer bar (being too diffuse to be called lines) and in the middle of the wing. The grey scales; together with the ground colour dominate the base, the dorsum, the termen and the apex. The ochreous scales especially run in horizontal streaks along the wing and surround three diffuse dark spots («the *gnorimoschemoid* spots») in the middle of the wing. Cilia whitish-yellow to yellow-greyish, in the tornus darker grey. Hindwings grey, lighter at the base; cilia yellowish-grey. The dorsal surface of the three first abdominal segments bearing yellowish-brown scales; the rest being whitish. Tibia of hind legs on the upper side white and dark ringed; on the lower side white.

In appearance *bodillum* n.sp. resembles *herbichi* Now. This species is larger and the ground colour is more brown without greyish. According to the description *soffneri* Riedl (POVOLNY 1966, as *antiquum*) must look like *bodillum* n.sp. too, but both this species and *herbichi* Now. differ from *bodillum* n.sp. in the genitalia. Nor can the new species be confused with *epithymellum* ssp. *brunneomaculellum* Hackm., the latter being nearly uniform dark brown.

Wing length: The female are slightly larger than the male. Second brood smaller than first brood. 1. brood ♂: 5 mm, ♀: 5—6 mm; 2. brood ♂: 3,5—4,5 mm, ♀: 4—5 mm.

Male genitalia: (Fig. 1—3). Uncus triangular, gnathos stout. Valva slender bent behind the middle, somewhat triangular apically; here with short hairs. Median incision of vinculum deep, broad rounded. Outer process of vinculum stout, sharply claw-formed bent, with short hairs; inner process of vinculum looking like teeth, the outer of which being the largest, covered with short hairs. Vinculum without thorned



FIGS. 1—4. *Gnorimoschema bodillum* sp.n.—1. Male genitalia, Denmark, Jutland, Raabjerg Mile, 12-VIII-1972, leg. E. S. Nielsen. Slide no. OK 1032 ♂. — 2. Aedeagus of the same specimen. — 3. Aedeagus, Denmark, Jutland, Raabjerg Mile, c.l. 13-VI-1973, *Salix repens*, leg. E. S. Nielsen. Slide no. OK 1438 ♂. — 4. Female genitalia, Denmark, Jutland, Raabjerg Mile, 15-VIII-1973, leg. O. Karsholt. Slide no. OK 1393 ♀.

lists between median incision and processes. Saccus squared, as long as the caudal edge of the vinculum. That of the tegumen a little longer. Aedeagus with a swollen base and a slender apical part, with a thorn near the tip.

Female genitalia. (Fig. 4). Apophyses anteriores half the length of the 8. segment with rounded tips. 8. sternit with narrow, nearly horizontal incisions, having no elongate lists. Lobi anales densely covered with stout hairs.

The genitalia of both male and female are symmetrical, but the drawings are made with exactness from the slides.

According to the genitalia *bodillum* n.sp. should be placed between *epithymellum* Stdgr. and *herbichi* Now. The former has long hairs on the apical part of the valva, and the apophyses anteriores 2/3 the length of the 8. segment. The other has a straight aedeagus without a swollen base and the apophyses anteriores only 1/3 to 1/4 the length of the 8. segment.

Material: Holotype: ♂, Dania, Jutland, Raabjerg Mile, c.l. 10-VI-1973, *Salix repens*, leg. E. S. Nielsen; Allotype: ♀, Dania, Jutland, Raabjerg Mile, c.l. 10-VI-1973, *Salix repens*, leg. E. S. Nielsen; Paratypes: 41 ♂♂, 43 ♀♀, Dania, Jutland, Raabjerg Mile, dates as follows: 1 ♂ 13-VIII-1972; 14 ♂♂, 17 ♀♀ 10-VI-1973; 1 ♂, 5 ♀♀ e.l. 10-VI-1973, *Salix repens*; 8 ♂♂, 5 ♀♀ 13-VI-1973; 2 ♂♂, 4 ♀♀ e.l. 13-VI-1973, *Salix repens*; 2 ♀♀ 23-VI-1973; 1 ♀ e.l. 23-VI-1973, *Salix repens*; all leg. E. S. Nielsen. — 15 ♂♂, 9 ♀♀ 15-VIII-1973, leg. E. S. Nielsen & O. Karsholt. Slide numbers: ESN: 378 ♀, 503 ♀, 504 ♀, 505 ♂, 506 ♂ OK: 1032 ♂, 1392 ♂, 1393 ♀, 1394 ♀, 1395 ♂, 1439 ♂, 1440 ♂, 1441 ♂, 1457 ♀.

Holotype and allotype are deposited at the Natural History Museum, Aarhus, Denmark. Paratypes in the Natural History Museum, Aarhus, Denmark and the Zoological Museum, Copenhagen, Denmark, and in the collections of the authors and a few other privat collections.

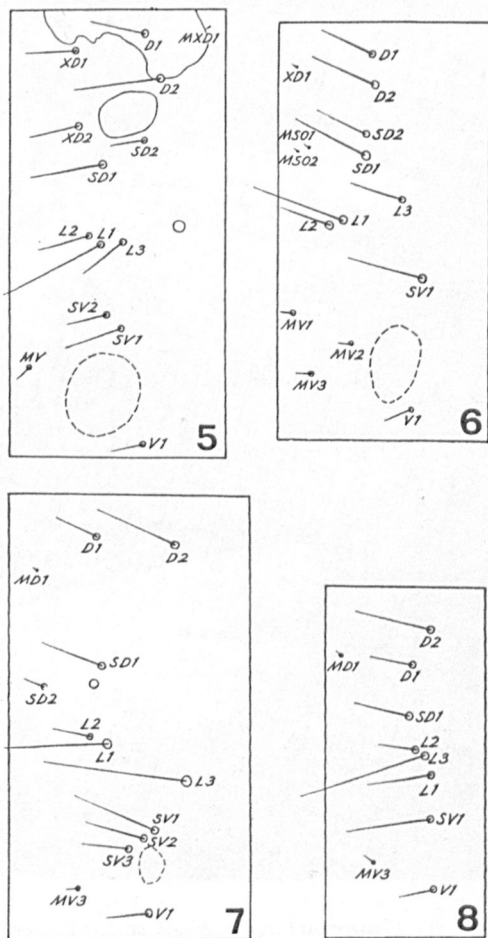
Larva

General description. Ground colour greyish-white. Cranial plates and pronotum dark brown. Each segment with a pair of dorso-lateral brown marks.

Chaetotaxy. (Fig. 5—8) (Nomenclature after HINTON (1946).

Prothorax. (Fig. 5) Thoracic shield weakly sclerotized. Only two proprioceptors seem present: MXD1, which is very tiny and on the prosternum only one MV-seta. XD1 and XD2 in a vertical row. D1 antero-dorsad from D2. SD-group separated under a weakly sclerotized area. L2 antero-dorsad from L1; L3 posterior from L1.

Meso- and metathorax. (Fig. 6) D1, D2, SD2 and SD1 in an oblique row. L3



FIGS. 5—8. The chaetotaxy of *Gnorimoschema bodillum* sp.n. — 5. Prothorax. — 6. Mesothorax. — 7. Sixth abdominal segment. — 8. Ninth abdominal segment.

postero-dorsad from L2 and L1. MD1 on a level between D1 and D2. MSD1 and MSD2 at the level of SD1.

Abdomen 1—8. (Fig. 7) No pinnacula present; sockets weakly developed. D1 anterior to D2. SD1 just above the spiracle; SD2 antero-ventrad from SD1, forming an oblique row with the lateral group. SV-group in an oblique row above coxa.

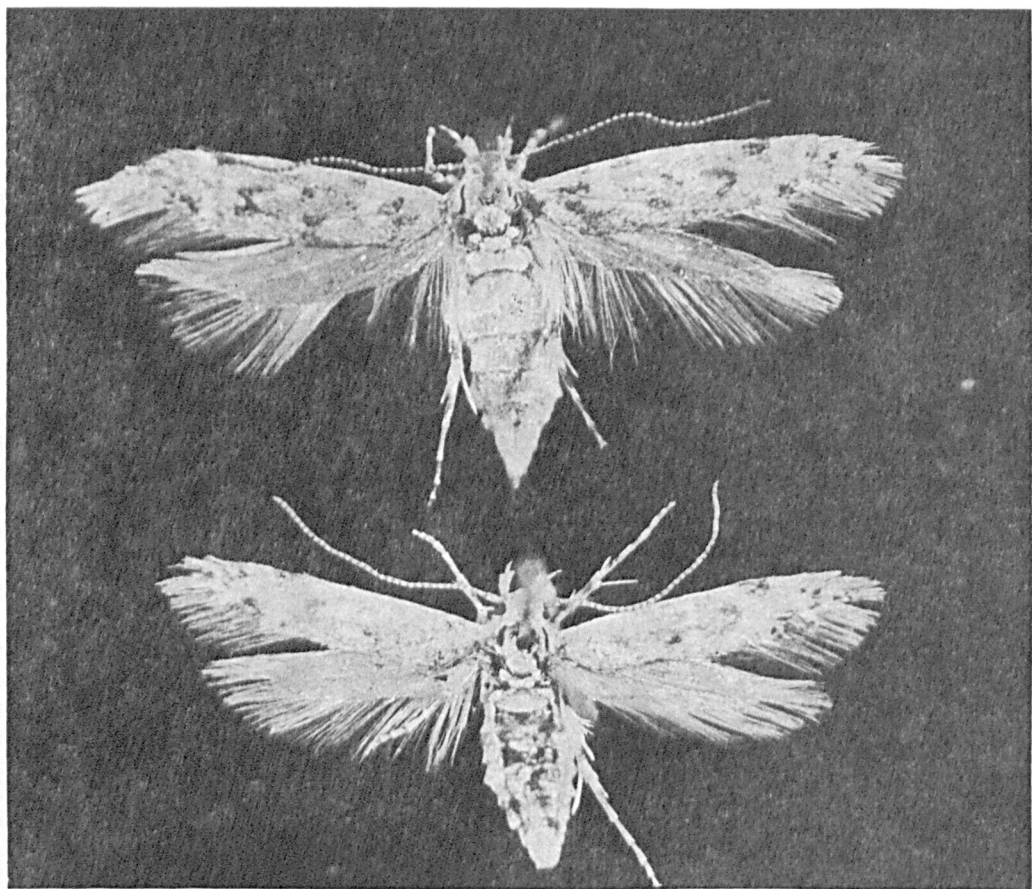


FIG. 9. *Gnorimoschema bodillum* sp.n. Allotype. ♀, Denmark, Jutland, Raabjerg Mile c.l. 10-VI-1973, *Salix repens*, leg. E. S. Nielsen. Holotype, ♂, Denmark, Jutland, Raabjerg Mile c.l. 10-VI-1973, *Salix repens*, leg. E. S. Nielsen.

Ninth abdominal segment. (Fig. 8) D1 a little anterior to D2—D1. SD1 differs from all other setae by being very slender and the socket more thickened. Lateral setae difficult to name, but according to the lengths, L2 is antero-dorsad from L3; L1 is ventral to L2.

Pupa

Pupa slender. Head and thorax reddish-brown, abdomen light brown. The

distal part of labrum forms two rounded lobes. Wings shorter than metathoracic legs, but longer than antennae. Last abdominal segment with only few straight setae present.

Notes on the biology

Although *G. bodillum* n.sp. has been searched for at similar localities, the species has only been found on the east side of the Raabjerg Mile, an area of



FIG. 10. Terra typica: Raabjerg Mile in the north of Jutland. The area of white dunes is present to the right, and the foodplants in the middle.

white dunes (migrating dune) in the north of Jutland in Denmark. As there is hardly any vegetation at this locality and as the physical circumstances must be characterized as extreme in these areas, the species must be presumed to have an adapted biology, a fact which studies at the locality in June and August 1973 also seem to indicate.

The species has only been found in a small area on the east side of the white dune area, where the dune is constantly sanding over an area of bog land with a vegetation of, among others, *Salix repens* L. and *Myrica gale* L. on which plants the species feeds (Fig. 10).

The larva lives on plants that have recently been sanded over but which are still alive and not completely covered. It lives there in spun sand tubes under the sand surface, where it develops a complicated system of galleries. From

the underground galleries tubes lead up to the underside of the lowest leaves on the food plants, where it is eating underside surface cuticle and tissue but leaving the upper surface intact. The underground galleries consist of grains of sand very loosely spun together, whereas the tubes above ground consist of sand spun firmly together; the underground galleries are as a rule 3–6 cm long but may exceptionally be longer; the length of the tubes above ground depends on the distance from the lowest leaves on the food plants, but are usually quite short.

When full-grown, the larva leaves the tube and runs about freely on the sand surface, where it now makes a new short tube for pupation. These new tubes are often very close to the sand surface, and as they are frequently found in areas with no vegetation, they are often found lying all free after windy weather.

It is unknown whether all larvae makes a new tube for pupation.

The pupal stage seems to last from few days to about one month.

The imago lives within the area around the food plants hiding in leaves and other remains of plants blown together, or near plant stems standing on the spot. The imago has never been seen flying, neither in the open nor in the laboratory, whereas it runs about freely on the sand surface, being most active in the day time. On warm sunny days it is running very fast for short distances (app. 30—50 cm), but often takes short leaps (app 10—25 cm). In between it keeps completely immovable and is very difficult to see. In cooler weather it moves about more slowly. Even during a heavy sandstorm a few may be seen active.

The distribution of the generations has not yet been explained, but has to be examined at future studies; however, throughout the month of June both larvae, pupae and imagines are found. In the middle of August there are both imagines and larvae of various sizes which might indicate several overlapping generations, but a certain dispersion of generations would in fact be very appropriate to a species living in such extreme environments.

Acknowledgements. During the work the authors have received help in form of material

from Dr. H. J. Hannemann (Berlin) and Dr. H. Krogerus (Helsingfors) and advices from t.f. prof. W. Hackman (Helsingfors), Mr. I. Svensson (Österslöv), mag. scient. N. P. Kristensen and Dr.h.c. N. L. Wolff (Copenhagen). Mr B. S. Nielsen and Mr S. Hansen have made the photographs, and the authorities of the Natural History Museum of Aarhus have helped in different ways. Dr. K. Sattler (London) has kindly stated, that the gender of *Gnorimoschema* is neuter. The authors wish to extend their gratitude to all these persons for their different kind of help.

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Rutsystems-beteckning för angivande av fyndplats inom biologisk forskning

De naturvetenskapliga museerna, samfunden och föreningarna har kommit överens att inom de biologiska vetenskaperna använda enhetskoordinatsystemet för betecknande av fyndplatser och iakttagelseorter. Det är därför att rekommendera att alla entomologer inför koordinatbeteckningar på de etiketter de låter trycka.

Enhetskoordinatsystemet är benämningen på ett rätvinkligt koordinat- och rut-system, vars p-axel sammanfaller med meridianen E 27° och som är angivet på de grund- och topografiska kartor i skala 1 : 20 000 och 1 : 100 000 som har utkommit efter år 1962, samt på de år 1967 utkomna generalkartorna i skala 1 : 400 000. Ifrågakartorna koordinatsystem anges på de nämnda kartorna med röda (bruna) rutor eller marginalbeteckningar. Enhetskoordinaterna är desamma som de på grundkartorna med svart angivna sifferbeteckningar och rutor, vilkas p-axel sammanfaller med p-axeln i enhetskoordinatsystemet.

Koordinattalet betecknar ett kvadratisk område, vars storlek bestäms av antalet siffror i koordinatbeteckningarna. Områdena kan sammanslås till större eller delas i mindre rutor med decimaler. Därvid är koordinatbeteckningarnas sifferantal i motsvarande grad mindre eller större. Varje rutas decimalindelning sker med siffrorna 0 till 9 nedifrån uppåt och från vänster åt höger. Koordinatbeteckningen är tvådelad. Dess första del anger rutans p-koordinat och dess senare del rutans i-koordinat. Mellan dessa delar kan i skrift användas ett kolon. p-koordinaten börjar alltid med siffran 6 eller 7, vilken betecknar 1 000 km. i:s värde i origo vid p-axeln är 500 km. Antalet siffror i koordinattalen är sålunda alltid udda och p innehåller alltid en siffra mera än i.

Angivande av koordinaterna för en ort eller plats sker med den noggrannhet, som i det aktuella fallet kan betecknas som ändamålsenlig. Om t.ex. platsens läge anges med en noggrannhet av 1 kvadratmil, är koordinattalet 5-siffrigt (t.ex. 669 : 40 eller 66940). Om angivelsen sker med noggrannheten av 1 ha är koordinattalet 9-siffrigt (t.ex. 66940 : 4009 eller 669404009). I sammandrag gällande utbredningsuppgifter och i andra därmed jämförbara fall insamlas uppgifterna i regel per grundruta, varmed avses en ruta vars yta är 1 kvadratmil. Vid lokala undersökningar används givetvis mindre rutor.

Utöver platsangivelse baserad på rutsystemet bör platsbeteckningen lämpligen samtidigt även ske med angivande av kommunens, byns, terrängformationers osv. namn, likaså skall beteckningarna för de naturvetenskapliga provinserna fortfarande användas. Vid användningen av kommunernas namn är det skäl att beakta, att kommunnamnet betecknar det område, som kommunen omfattade under det år, under vilket iakttagelsen gjordes.

Finland 669 : 40

N. Sibbo

24. VII. 1971

Kalle Johansson

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Coniopterygidae from South and Central America (Neuroptera)

Martin Meinander

Abstract

MEINANDER, MARTIN: Coniopterygidae from South and Central America (Neuroptera). — Notulae Entomol. 54:97—106. 1974.

Records of 15 species are listed, six of which are new: *Pampoconis insulana* (Jamaica), *Coniopteryx* (*Scotoconiopteryx*) *panamensis* (Panama), *C. (C.) dominicana* (Dominica), *Semidalis brasiliensis* (Brazil), *S. panamensis* (Panama) and *S. peruviansis* (Peru). The following species are recorded from new countries: *Coniopteryx* (*Scotoconiopteryx*) *fumata* (Venezuela), *C. (S.) tucumana* (Venezuela), *C. (C.) callangana* (Brazil), *C. (C.) mexicana* (Honduras), *C. (C.) simplicior* (Jamaica, Venezuela) and *Semidalis boliviensis* (Venezuela). A nomenclatorial note is given on *Pampoconis uncinata* Adams and *P. punctipennis* Adams.

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Through the kindness of the curators of several museums in the U.S.A., I have had the opportunity to examine a large material of recently collected Coniopterygidae from various parts of America. Our knowledge of the Coniopterygidae of America south of Mexico is still very restricted and only single specimens are recorded for many species. The present material shows that at least some species have a rather large distribution.

The Coniopterygidae of South America belong to six genera or species groups. *Pampoconis*, *Neoconis*, *Scotoconiopteryx* and *Incasemidalis* are restricted to South and Central America, though *Neoconis* also occurs in the southernmost parts of North America. Besides the species belonging to these endemic genera, species of *Coniopteryx* s.str. and *Semidalis* are also recorded from South and Central America. Both these genera have a worldwide distribution, but the South and Central American species belong to the *Coniopteryx westwoodi* and *Semidalis inconspicua*

species groups, which are endemic to America, and thus all the six groups of South American species are endemic American groups. Several genera and species groups occurring in North America have a holarctic or even larger distribution, and specimens belonging to them are also recorded from Mexico and the West Indies.

For the terminology of the morphological parts, the reader is referred to MEINANDER 1972. The only references included in the synonymes are those not mentioned in MEINANDER 1972.

The institutions in which the material is deposited are abbreviated as follows:

- CAS — California Academy of Sciences, Golden Gate Park, San Francisco, Cal. 94118, U.S.A.
- MZH — Universitetets Zoologiska Museum, N. Järnvägs-gatan 13, SF-00100 Helsingfors 10, Finland.
- UCA — Division of Entomology and Parasitology, University of

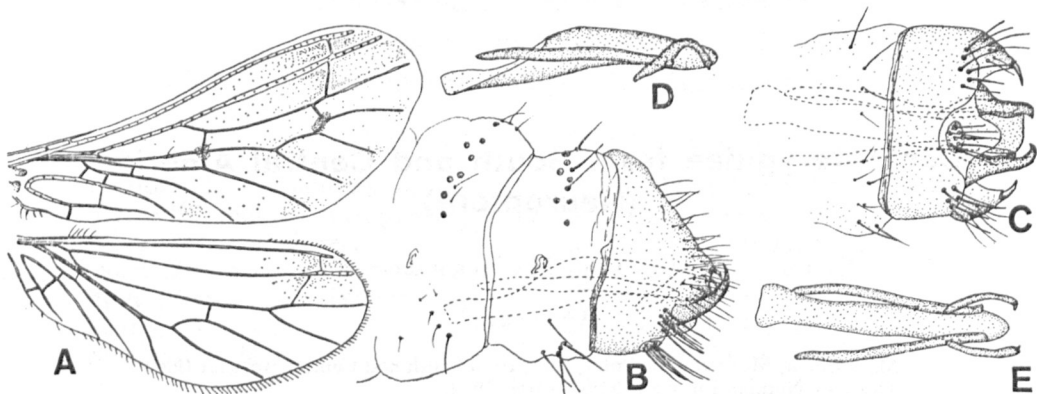


FIG. 1. Male of *Pamponis insulana*. A. Wings, B. terminal abdominal segments in lateral view, C. ditto in ventral view, D. internal genitalia in lateral view, E. ditto in ventral view.

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Acknowledgements: My thanks are due to the following curators for kindly letting me investigate material belonging to their institutions: Dr. P. H. Arnaud Jr. (CAS), Dr. Jerry A. Powell (UCA) and Dr. Oliver S. Flint Jr. (USNM). Dr. Kurt K. Günther, Museum für Naturkunde, DDR-104 Berlin, kindly arranged the loan of the type specimen of *Semidalis boliviensis*.

List of species

Pamponis insulana Meinander,
sp.n.

Fig. 1.

Type: ♂ holotype; Jamaica; USNM.

Head capsule yellow. Eyes blackish and small, height 0.20 mm. Antennae 28-segmented, scape yellow, pedicel and flagellum greyish brown. Scape slightly longer than broad, pedicel about as long as broad, flagellar segments slightly broader than long. Palpi greyish brown with yellow distal segments.

Thorax almost unicolorous, shiny brown.

Wings, Fig. 1A. Venation of fore wing

almost similar to that of the type species, *P. latipennis* Meinander, but the cross-veins R_{5+M} and $M-Cu_1$ strike M at the same point, at the distal median bristle, the cross-vein $R_{4+5}-M_{1+2}$ is much shorter than in *P. latipennis* and Cu_2 is not sinuous. Venation of hind wing differing from that of *P. latipennis* in the more distal fork of R_5 and in M and Cu_1 , which basally run very close to each other until they reach the distal cross-vein $M-Cu_1$. Membrane of both wings light greyish, in fore wing with two small dark spots surrounding the distal median bristle and the cross-vein $R_{4+5}-M_{1+2}$. Length of fore wing 2.3 mm, of hind wing 1.9 mm.

Abdomen with large plicatures on segments 3—6 and traces of small ones on segment 2.

Male genitalia, Figs. 1B—E. Ectoprocts caudally and ventrally with a short stout spine on each side. All parts of the ring formed by the ninth segment and the ectoprocts about equally sclerotized, the basal margin of ring ventrally with an apodeme. A distinct slightly sclerotized ligulate hypandrium with a tuft of long setae medially and tufts of long setae also occurring laterally of it on the ninth sternite. Penis distally tubular, basally flattened but not ending in

any anterior rods. Styli articulating with the ninth segment and acute clavate. Parameres simple rod-like, distally each having a curved rod-like structure articulating with them. These structures bear a short spine distally, and closely resemble the structures of *Neoconis* called styli in MEINANDER 1972.

Female unknown, biology unknown.

Of the previously described four species of *Pampoconis*, only *P. punctipennis* Adams has spotted fore wings, but the spots are differently arranged than in *P. insulana*. In all the other species of *Pampoconis*, the penis is clearly composed of two sclerites, which anteriorly are separate and rod like. Rod like structures similar to those articulating with the distal ends of the parameres in *P. insulana* are not found in the other species of *Pampoconis*, but in the closely related genus *Neoconis* the parameres apically always have some kind of appendages. *Neoconis* is separated from *Pampoconis* by the absence of a distal cross-vein *M-Cu*₁ in the hind wing and also lacks the styli articulating with the ninth segment present in *Pampoconis*. The distal appendages on the parameres in *Neoconis* were earlier considered by me (MEINANDER 1972) to be styli, but the appendages on the parameres in *Pampoconis insulana* cannot be styli, since distinct styli articulating with the ninth segment are also present. Accordingly, if the appendages on the parameres in *Neoconis* are homologous to those in *P. insulana*, they cannot be considered styli either.

Distribution: Jamaica.

Specimen examined: Jamaica, Runaway Bay, 1970-03-01...08, ♂ holotype, W.W. Wirth (USNM).

Pampoconis latipennis Meinander, 1972

Pampoconis latipennis MEINANDER, 1972:159; ADAMS, 1973:250.

Distribution: Recorded from Argentina (MEINANDER 1972) and south Chile (ADAMS 1973).

Specimens examined: Chile, Osorno Prov. Futacatruhue, 6 m, 1967-01-20, 1 ♂, M.E. Irwin (UCA); 1 ♂, M.E. Irwin (MZH); Valdivia Prov. Rio Pilmaiquén S of Rio Bueno, 40 m, 40°20' S — 73°09' W, 1967-02-03, 1 ♂, E. I. Schlinger (UCA).

Pampoconis uncinata Adams in Meinander, 1973

Pampoconis uncinatus ADAMS, 1973a:251.

Pampoconis uncinata Adams. MEINANDER, 1973: 25.

Pampoconis uncinata Meinander. ADAMS, 1973b: 324.

In a note, ADAMS (1973b) states that the author of *P. uncinata* and *P. punctipennis* should be Meinander, because in the description of *P. dentifera* I summarized the differences separating that species from *P. latipennis*, "*P. punctipennis* Adams in litt." and *P. uncinata* Adams in litt." ADAMS (1973b) writes that this appears sufficient to make the last two names available nomenclatorially. However, the International Code of Zoological Nomenclature, Article 50, says; "The author of a scientific name is the person who first publishes it - - -, unless it is clear from the contents of the publication that only one of the joint authors, or some other person, is alone responsible for the name and the condition that make it available." In my description of *P. dentifera* (MEINANDER 1973), I indicated that the two species *P. punctipennis* Adams in litt. and *P. uncinata* Adams in litt. would be described by ADAMS, and he is thus the author of the two species, although my paper happened to be published earlier, because of a delay in the printing of his.

Distribution: The species was described from Central Chile, the present find comes from farther south.

Specimen examined: Chile, Valdivia Prov. Cudico, 40 m, 40°15' S — 73°09' W, 1966-09-10...11, 1 ♂, M.E. Irwin & E. I. Schlinger (UCA).

Coniopteryx (Scotoconiopteryx)
fumata Enderlein, 1907

Coniopteryx (Scotoconiopteryx) fumata Enderlein. MEINANDER, 1972:232.

Distribution: Previously recorded from Colombia and southern Brazil.

Specimens examined: Venezuela, Aragua Rancho Grande, Parque Nacional Henry Pittier, 1100 m, 1969-03-04, 1 ♂, M.I. Irwin (UCA). — Colombia, Rio Raposo, 1965-02, 1 ♂, V.H. Lee (USNM).

Coniopteryx (Scotoconiopteryx)
panamensis Meinander, sp.n.

Fig. 2.

Type: ♂ holotype; Panama Canal Zone; UCA.

Head dark brown. Frons and palpi normal. Antennae dark brown, 31-segmented. Scale-like hairs on apex of pedicel and flagellar segments. Basal flagellar segments about twice as broad as long, distal segments slightly longer than broad. Ordinary hairs in two regular whorls. No setae on flagellar segments.

Thorax yellowish brown with blackish shoulder spots. Membrane of wings dark brown. Length of fore wing 1.7 mm, of hind wing 1.4 mm.

Wax glands on abdomen few and large.

Male genitalia, Figs. 1A—E. Hypandrium in lateral view higher than broad. Anterior margin ventrally broadly connected to an apodeme, which runs along the border of the median apical incision.

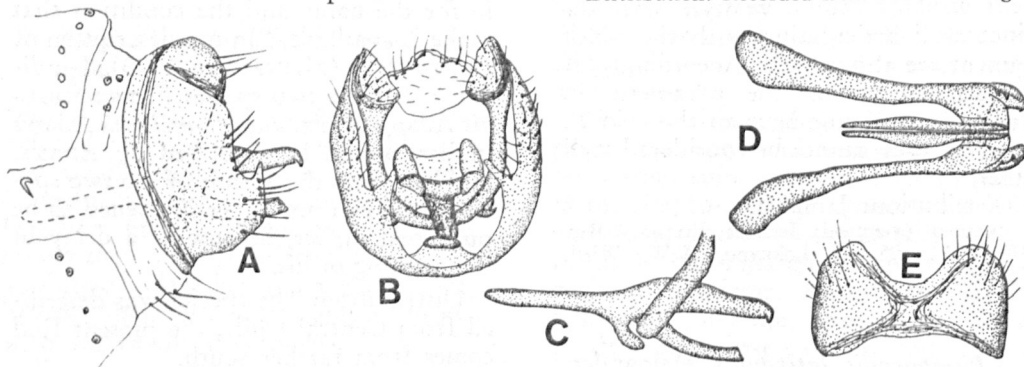


FIG. 2. Male of *Coniopteryx panamensis*. A. Terminal abdominal segments in lateral view, B. ditto in caudal view, C. internal genitalia in lateral view, D. parameres and penis in ventral view, E. hypandrium in ventral view.

Processus terminales indistinct. Median apical incision broad and shallow. Processus intermedii acute and upwards directed. Processus laterales insignificant. Gonarcus not particularly broad. Styli fused into an arch below the parameres. Parameres apically connected ventrally by a broad membrane, apically slightly bent downwards. Penis consisting of a pair of long sclerotized rods.

Female unknown. Biology unknown.

Distribution: Panama.

Specimens examined: Panama Canal Zone, Barro Colorado Island, flight trap, 1967-03-12, ♂ holotype, M. E. Irwin (UCA); 1 ♂, M. E. Irwin (MZH).

Coniopteryx (Scotoconiopteryx)
tucumana Navas, 1930

Coniopteryx (Scotoconiopteryx) tucumana Navas. MEINANDER, 1972:235.

Distribution: Recorded from Argentina, Uruguay and south Brazil. The present record from Venezuela indicates a large distribution in South America.

Specimens examined: Venezuela, Aragua Rancho Grande, Parque Nacional Henry Pittier, 1100 m, 1964-03-04, 1 ♂, M.E. Irwin (UCA). — Brazil, Santa Catarina, Nova Teutonia, 1970-10, 1 ♂, F. Plaumann (USNM).

Coniopteryx (C.) callangana Enderlein, 1906

Coniopteryx (C.) callangana Enderlein. MEINANDER, 1972:255.

Distribution: Recorded from Peru and Argen-

tina (Navas, unchecked). The present record from south Brazil makes Navas' unchecked record from Argentina seem probable, but it can be confirmed only by an investigation of the genitalia of Navas' specimen.

Specimens examined: Brazil, Santa Catarina, Nova Teutonia, 1972-08, 1 ♂ 1 ♀, F. Plaumann (USNM); 1972-11, 1 ♂, F. Plaumann (USNM).

Coniopteryx (C.) dominicana Meinander, sp. n.

Fig. 3.

Type: ♂ holotype; Dominica; USNM.

Head light yellowish brown. Eyes small. Frons unsclerotized and without any lobe, hook or setae. Antennae greyish brown, 20-segmented. Scale-like hairs on apex of flagellar segments. Flagellar

segments about as long as broad and with the ordinary hairs in two regular whorls, in addition to them a seta which is about one and a half times as long as the length of the segment. Palpi greyish brown, normal.

Thorax yellowish brown with dark brown shoulder spots. Membrane of wings light greyish. Length of fore wing 1.7 mm, of hind wing 1.4 mm.

Male genitalia, Figs. 3A—F. Hypandrium in lateral view only slightly higher than broad, consisting of two large lobes which are evidently homologous to the processus terminales. Median apical incision very deep and parallel-sided.

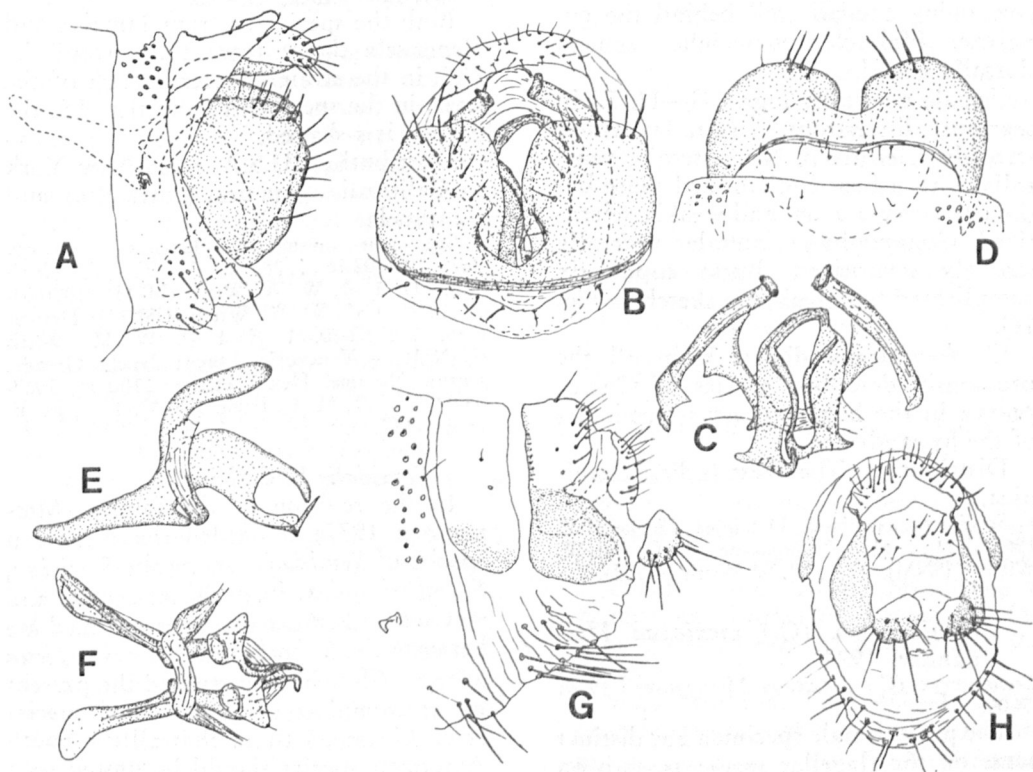


FIG. 3. *Coniopteryx dominicana*. A. Male terminal abdominal segments in lateral view, B. ditto in caudal view, C. male internal genitalia in caudal view, D. male terminal abdominal segments in ventral view, E. male internal genitalia in lateral view, F. ditto in ventral view, G. female terminal abdominal segments in lateral view, H. ditto in caudal view.

Posterior margin (with hairs) of the hypandrium continuous with the dorsal (without hairs) margin and thus no processus laterales present. Apodeme along the anterior ventral margin of hypandrium uninterrupted. No transverse plate. Gonarcus consisting of well-sclerotized narrow curved rods, which continue forwards and downwards anteriorly of the hypandrium. Styli dorsally broadly fused with the gonarcus and forming an arch below the parameres. Parameres with distinct processus ventralis, dorsally of which they are connected by a band-like arch. Parameres distally deeply bilobed, both lobes terminating in long narrow appendages. Ectoprocts continuing caudad well behind the gonarcus. Holoscleritous eight segment dorsally broad.

Female genitalia, Figs. 3G—H. Eight segment discleritous, tergite ventrally strongly sclerotized. Ninth tergite ventrally with a broad sclerotized plate but dorsally very narrow and weakly sclerotized. Gonapophyses laterales ventrally strongly sclerotized. Bursa copulatrix complicated but weak; see sketch in Fig. 1G.

C. dominicana differs from all the previously described species of *Coniopteryx* in the huge processus terminales of the hypandrium.

Distribution: The West Indies, Dominica.

Specimens examined: Dominica, Clarke Hall, 1965-03-21...31, ♂ holotype, 1 ♀, W. W. Wirth (USNM); 1 ♂, W. W. Wirth (MZH).

Coniopteryx (C.) *mexicana* Meinander, 1974

Coniopteryx (C.) *mexicana* MEINANDER, 1974: 00.

The present male specimen has distinct setae on the flagellar segments, two on the first flagellar segment and one on the others, while the specimens described in MEINANDER 1974 lacked setae. The specimen thus resembles *C. westwoodi*

Fitch, but the third segment of the maxillary palpi is distinctly flattened, as in *C. mexicana*, and the median apical incision is more smoothly curved, also as in that species. *C. westwoodi* and *C. mexicana* are very closely related and the differences between them perhaps only represent the regional variation of a single species.

Distribution: Mexico, Sinaloa and Honduras.

Specimen examined: Honduras, Pespire, 1967-08-01, 1 ♂, O. S. Flint Jr. (USNM).

Coniopteryx (C.) *simplicior* Meinander, 1972

Coniopteryx (C.) *simplicior* MEINANDER, 1972: 261; MEINANDER, 1974:00.

Both the specimens from Jamaica and Venezuela differ from those from the U.S. in the straight outer branch of the styli; in the specimens from the U.S. the branch is s-shaped.

Distribution: U.S.A. from New York to California, Jamaica, Costa Rica and Venezuela.

Specimens examined: Jamaica, Runaway Bay, 1969-02-16...28, 1 ♂, W. W. Wirth (USNM); 1 ♂, W. W. Wirth (MZH); 1970-03-01...08, 1 ♂, W. W. Wirth (USNM); Harwar Gap, 1969-02-20, 1 ♂ 1 ♀, W. W. Wirth (USNM). — Venezuela, Aragua Rancho Grande, Parque Nacional Henry Pittier, 1100 m, 1967-03-04, 3 ♂♂, M. E. Irwin (UCA), 1 ♂, M. E. Irwin (MZH).

Semidalis Enderlein

In the revision of the family (MEINANDER 1972) I divided the American species of *Semidalis* among the *S. vicina*, *S. kolbei* and *S. inconspicua* groups and stated that *S. mexicana* was intermediate between the *S. kolbei* and *S. inconspicua* groups. After having studied the present material and some undescribed species from Mexico, I think that all the South American species should be united in a single species group, which includes the old *S. inconspicua* and *S. kolbei* groups. *S. kolbei* is aberrant and I therefore prefer to call the group the *S. inconspi-*

cua group. It is characterized by the unicolorous wing membrane, absent or very short outer process of the ectoprocts, absence of a terminal spine from the hypandrium and unfused uncini. The *S. inconspicua* group thus comprises *S. boliviensis* (Enderlein), *S. brasiliensis* Meinander, *S. byersi* Meinander, *S. deserta* Meinander, *S. flinti* Meinander, *S. inconspicua* Meinander, *S. kolbei* Enderlein, *S. mexicana* Meinander, *S. panamensis* Meinander, *S. peruviansis* Meinander and *S. wallacei* Meinander.

Semidalis boliviensis (Enderlein, 1905)

Fig. 4A—C.

Semidalis boliviensis (Enderlein). MEINANDER 1972:332.

The genitalia of the present male specimen greatly resemble those of the type specimen of *S. boliviensis* and it is most probably conspecific with it, although the present material includes three new very closely related species from various parts of South and Central America and it is thus evident that there are several sibling species in the area. The vertex of the present specimen is raised and has frontally a weakly sclerotized area, which is covered by hairs bending over from the adjacent areas (Fig. 4A). Unfortunately the head of the type specimen is so squashed that it was impossible to ascertain whether it possessed these features.

The antennae of the present specimen are 37-segmented (type 42-segmented), the length of the fore wing is 2.6 mm, that of the hind wing 2.0 mm. The inner genitalia of the specimen from Venezuela are illustrated in Figs. 4B—C. The wing venation does not show any of the peculiarities in the wings of the type specimen.

Distribution: The type specimen is from Bolivia; the present record from Venezuela.

Specimen examined: Venezuela, Aragua Ran-

cho Grande, Parque Nacional Henry Pittier, 1100 m, 1967-03-04, 1 ♂, M. E. Irwin (UCA).

Semidalis brasiliensis Meinander, sp. n.

Fig. 4D—F.

Type: ♂ holotype; Brazil, Santa Catarina; USNM.

Head and thorax very pale, apparently a newly hatched specimen. Antennae 36-segmented. Length of fore wing 2.8 mm, of hind wing 2.3 mm.

Male genitalia, Figs 4D—F, closely resembling those of *S. boliviensis*. Outer process of ectoprocts short, about as broad as long. No distinct process at inner angle of ectoprocts. Hypandrium dorsally broad in caudal view. Parameres slender, their apex slightly swollen, with one upwards directed membranous apophysis and apically with two ventral upwards directed clavate apophyses. Laterally of parameres two clavate sclerites, one of which may be homologous to the uncinus. In *S. boliviensis* there is only one ventral apophyses on the apex of the parameres.

Distribution: So far recorded only from southern Brazil.

Specimen examined: Brazil, Santa Catarina, Nova Teutonia, 1970-07, ♂ holotype, F. Plauermann (USNM).

Semidalis panamensis Meinander, sp. n.

Fig. 4G—I

Type: ♂ holotype; Panama Canal Zone; UCA.

Head dark brown. Antennae light greyish, 31 (♀) — 34 (♂) -segmented.

Thorax dark brown. Membrane of wings light brownish. Length of fore wing 2.2—2.4 mm, of hind wing 1.7—2.1 mm.

Male genitalia, Figs. 4G—I, closely resembling those of *S. boliviensis*. Outer process of ectoprocts very short, much broader than long. No distinct process at inner angle of ectoprocts. Hypandrium in caudal view rather broad, without any spine. Parameres slender, api-

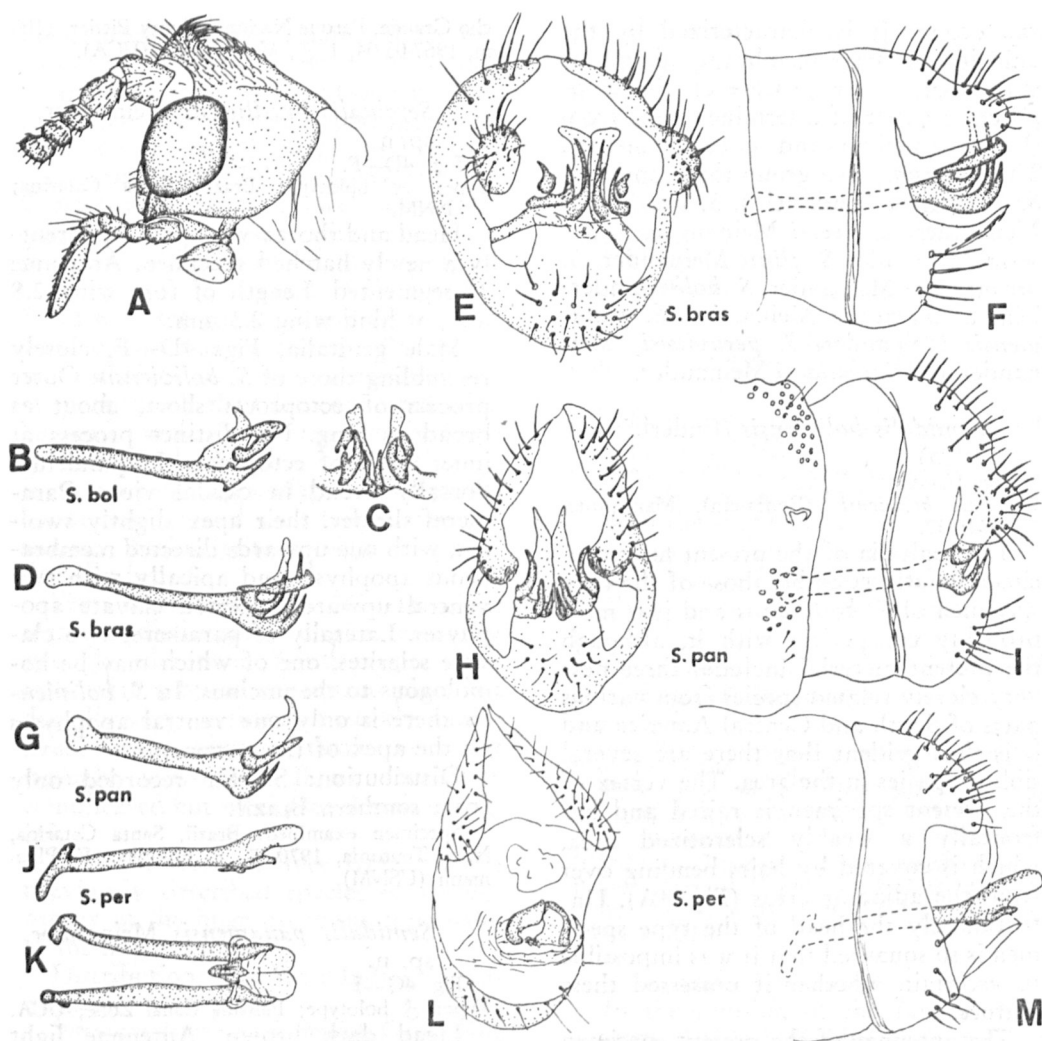


FIG. 4. A—C. *Semidalis boliviensis* male from Venezuela, D—F. *S. brasiliensis* male, G—I. *S. panamensis* male, J—M. *S. peruviansis* male. — A. head in lateral view, BDGJ, internal genitalia in lateral view, CEHL. genitalia in caudal view, FIM. terminal abdominal segments in lateral view, K. internal genitalia in ventral view.

cally slightly swollen, with one upwards directed membranous apophysis and apically with two ventral upwards directed clavate apophyses. Laterally of parameres clavate sclerites, which are apparently the uncini. *S. panamensis* differs from *S. boliviensis* in having only

one pair of uncinus-like sclerites and two ventral clavate apophyses apically on the parameres.

Distribution: So far recorded only from Panama.

Specimen examined: Panama Canal Zone, Barro Colorado Island, 1967-03-12, 1 ♂ 2 ♀♀, M. E. Irwin (UCA).

Semidalis peruviansis Meinander,
sp. n.

Fig. 4J—M.

Type: ♂ holotype; Peru, Huanuco; CAS No. 12174.

Head ochreous yellow. Antennae yellowish grey, 50-segmented.

Thorax ochreous with light brown shoulder spots. Membrane of wing very light. Length of fore wing 3.4 mm, of hind wing 3.0 mm.

Male genitalia, Figs. 4J—M. Ecto-procts rather small without any outer process or process at the inner angle. Parameres slender, basally with a small transverse rod, apically with a blunt broad dorsal process. Ventrally both parameres are connected by a membrane to a small ventral unpaired sclerite. Parameres apically ventrally surrounded by a weakly sclerotized membrane.

Distribution: So far recorded only from Peru.

Specimens examined: Peru, Huanuco. 1954-09-16, ♂ holotype, E. I. Schlinger & E. S. Ross (CAS).

Semidalis kolbei Enderlein, 1906

Semidalis kolbei Enderlein. MEINANDER, 1972: 333; ADAMS, 1973a:254.

Distribution: Common throughout Chile and also recorded once from Argentina (ADAMS 1973a) (Neuquén, San Martín de los Andes).

Specimens examined: Chile, Coquimbo Prov. Pichidanguí 32°08' S — 71°32' W, 1966-08-12, 6 ♂♂ 1 ♀, E. I. Schlinger (UCA); Fray Jorge, Pachingo 5 km W, 520 m, 30°27' S — 71°32' W, 1966-04-30, 3 ♀♀, M. E. Irwin (UCA); Pachingo 4 ♂♂ 1 ♀, M. E. Irwin (UCA); Bosque Fray Jorge Ovalle, 1950-12-11, 1 ♂, Ross & Michelbacher (CAS); 35 mi S of Ovalle, 1950-12-01, 1 ♀, Ross & Michelbacher (CAS); 15 mi S of Los Vilos, 1950-12-13, 2 ♂♂ 7 ♀♀, Ross & Michelbacher (CAS); 5 mi N of Illapel, 1950-11-30, 1 ♂ 1 ♀, Ross & Michelbacher (CAS); Quilimarí, 1966-08-25, 1 ♀, M. E. Irwin (UCA); Hacienda Illapel, Río Illapel, 600—900 m, 1966-10-19, 1 ♂ 1 ♀, E. I. Schlinger & M. E. Irwin (UCA). — Aconcagua Prov. Zapallar, 1950-11-27, 2 ♂♂ 4 ♀♀, Ross & Michelbacher (CAS); 10 km E of Zapado, 1950-11-28, 26 ♂♂ 2 ♀♀, Ross & Michelbacher (CAS). — Valparaíso Prov. Los Perales at Río Marga-Marga, 33°08' S — 70°

18' W, 330 m, 1967-02-03, 1 ♂ 4 ♀♀, M. E. Irwin (UCA); 335 m, 1966-10-14, 3 ♂♂ 2 ♀♀, M. E. Irwin & E. I. Schlinger (UCA); Quintay, 33°12' S — 71°41' W, 0 m, 1967-02-19, 1 ♀, E. I. Schlinger (UCA); Cuesta Pucalan, 32°44' S — 71°16' W, 1966-08-01, M. E. Irwin; Cuesta El Melon, 32°37' S — 71°13' W, 1966-11-03, 1 ♀, E. I. Schlinger (UCA). — Santiago Prov. Quebrada de la Plata Maipú, 33°30' S — 70°55' W, 1966-03-17, 1 ♂, M. E. Irwin (UCA); 1966-08-03, 1 ♂, M. E. Irwin (UCA); 1966-01-26, 2 ♀♀, M. E. Irwin (UCA); 1966-02-02, 2 ♀♀, M. E. Irwin (UCA); 1966-02-10, 1 ♂, M. E. Irwin (UCA); 1966-02-09, 1 ♀, M. E. Irwin (UCA); 1966-09-19, 1 ♂ 2 ♀♀, M. E. Irwin (UCA); 1966-09-29, 1 ♂, M. E. Irwin; 1966-04-27, 1 ♀, M. E. Irwin (UCA); 1966-04-26, 1 ♀, M. E. Irwin (UCA); Quebrada de la Plata Rinconado Maipú, 33°31' S — 70°47' W, 510 m, 1966-08-15, 1 ♂, M. E. Irwin (UCA); 1966-04-26, 2 ♀♀, M. E. Irwin (UCA); 750 m, 1966-08-15, 2 ♀♀, M. E. Irwin (UCA); El Alfalfal, 1969-10-12... 13, 1 ♂ 1 ♀, Flint & Barria (USNM), 1 ♂ 1 ♀, Flint & Barris (MZH); El Canelo, 35°35' S — 70°27' W, 1967-01-10, 1 ♂, E. I. Schlinger (UCA); Cuesta la Dormida, *Notophagus* forest, 33°04' S — 71°03' W, 1966-11-01, 1 ♀, E. I. Schlinger (UCA). — Colchagua Prov. 3 km N Calleyones, 1967-01-22, 1 ♂, E. I. Schlinger (UCA). — Curico Prov. Cajon de Río Claro, S.E. Los Quenes, 35°13' S — 71°15' W, 1000 m, 1966-10-09, 1 ♂, E. I. Schlinger (UCA). — Nuble Prov. 2.7 km Las Trancas, 1320 m, 1967-01-15, 1 ♀, M. E. Irwin & L. A. Stange (UCA); Las Trancas rd nr Termas de Chillan, 34°35' S — 70°40' W, 1350 m, 1967-02-15, 1 ♀, E. I. Schlinger (UCA); Recinto, 1968-03-04... 06, 1 ♂, Flint & Pena (USNM); 50 km E of San Carlos, 1950-12-28, 2 ♀♀, 1 juv, Ross & Michelbacher (CAS). — Bio-Bio Prov. El Abanico, 1950-12-30, 1 ♂ 2 ♀♀, Ross & Michelbacher (CAS); 50 km W Tucapel, 1950-12-28, 2 ♀♀, 1 juv, Ross & Michelbacher (CAS). — Aracú Prov. Pte. Tronol, 1969-10-15... 16, 1 ♀, Flint & Barria (USNM). — Malleco Prov. Nahuelbuta Nat'l Pk, 35 km W Angol, 1220 m, 1967-02-12, 1 ♀, E. I. Schlinger (UCA); Nahuelbuta Nat'l Pk., 1967-02-01, 13 ♂♂ 4 ♀♀, E. I. Schlinger (UCA); Parque Nacional de Nahuelbuta, 38°01' S — 73°13' W, 4350', 1967-01-24, M. E. Irwin (UCA); P.N. Contulmo, 1969-01-02, 3 ♂♂, Flint & Cekalovic (USNM); Nahuelbuta Nat'l Pk., 1300 m, 1967-01-24, 2 ♀♀, M. E. Irwin (UCA); W of Angol, Crest of Sierra Nahuelbuta, 1200 m, 1951-01-13, 1 ♀, Ross & Michelbacher (CAS); 15.6 km E Angol, Nahuelbuta Mts., 600 m, 1966-11-08, 1 ♀, M. E. Irwin & E. I. Schlinger (UCA); Termas de Río Blanco, 1080 m, 1967-01-22, 1 ♀, M. E. Irwin & L. A. Stange (UCA). — Cautín Prov. 12.3 km W Loncoche, 280 m, 1966-

11-10, 1 ♂, E. I. Schlinger & M. E. Irwin (UCA); 12.7 km N Loncoche, 390 m, 1967-01-21, 1 ♂ 4 ♀♀, M. E. Irwin, L. A. Stange (UCA). — Valdivia Prov. Cudico, 40°15' S — 71°09' W, 40 m, 1966-11-10...11, 1 ♂ 1 ♀, M. E. Irwin & E. I. Schlinger (UCA). — Osorno Prov. Pucatrihue, 40°28' S — 73°43' W, 0 m, 1967-02-04, 2 ♀♀, E. I. Schlinger (UCA); 6 m, 1967-01-20, 1 ♂ 3 ♀♀, M. E. Irwin (UCA); 10 km E of Puyehue, 1951-01-24, 1 ♂ 1 ♀, Ross & Michelbacher (CAS). — Llanquihue Prov. Petrohué, 41°08' S — 72°25' W, 100 m, 1 ♂, E. I. Schlinger & M. E. Irwin (UCA); NW shore of Lago Chapo, 1966-11-13, 2 ♂♂ 1 ♀, E. I. Schlinger & M. E. Irwin (UCA). — Aysen Prov. 8 km W Chile Chico, 540 m, 1966-11-22, 1 ♀, M. E. Irwin & E. I. Schlinger (UCA). — Magellanes Prov. Punta Arenas, 1966-01-09...15, 3 ♂♂ 10 ♀♀, Flint & Cekalovic (USNM); 3 ♀♀, Flint & Cekalovic (MZH); 102.2 km NNW Punta Arenas, *Notophagus* ass., 430 m, 1966-12-06, 1 ♂ 1 ♀, M. E. Irwin & E. I. Schlinger (UCA); 4 km W Laguna Amarga, 1966-12-08, 13 ♂♂ 3 ♀♀, M. E. Irwin & E. I. Schlinger (UCA); 10 km N Laguna Amarga, 1966-12-08, 16 ♂♂ 5 ♀♀, M. E. Irwin & E. I. Schlinger (UCA); Tierra del Fuego, 35 km SW

Cameron, 30 m, wet *Notophagus* forest, 1966-12-02, 4 ♀♀, E. I. Schlinger & M. E. Irwin (UCA); 40 km NW Porvenir, 20 m, 1966-12-03, 2 ♀♀, M. E. Irwin & E. I. Schlinger (UCA). — Prov? Tolhuaca, 1968-01-09, 1 ♂, R. Usinger (UCA).

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Litteratur

LINDROTH, C. H., ANDERSSON H., BÖDVARSSON, H. & RICHTER, S. H. 1973: Surtsey, Iceland. The development of a new fauna, 1963—1970. Terrestrial invertebrates. — Entomol. Scand., Suppl. 5. 280 sidor, 45 tab., 50 fig. Pris 140 DKr.

Den år 1963 ur havet uppstigna vulkanön Surtsey har gett biologerna ett enastående tillfälle att från början följa med huru terrestriska organismer erövrar ny terräng genom luft- och vattenburen invasion. Föreliggande arbete, som gäller landevertabrater, baserar sig på material ej blott från Surtsey utan även från angränsande öar och fastlandet. Materialet har sedan bearbetats av ett flertal specialister och som teamarbete sammanställts till ett imponerande verk. Bland artropoderna dominerar de luftburna diptererna, som tydligt främst kommit till Surtsey med NW- och NE-vindar från fastlandet. På hyd-

rokor väg har de flesta av Surtseys kärlväxter kommit i land samt även vissa collemboler och kvalster med drivved och grästorvor. Långdistansspridning kan konstateras i fråga om vissa immigrantfjärilar. Som exempel på artropodkolonisation i strandzonen på Surtsey kan nämnas en temporärt etablerad näringsskedja som inkluderar en helomyzid-fluga och ett kvalster. I de allmänna kapitlen i slutet av arbetet behandlas många intressanta kolonisationsproblem. Undersökningarna fortsätter och man kan emotse nya bidrag behandlande detta fängslande tema.

Walter Hackman

Weitere nordostpaläarktische *Stenus*-Arten (Coleoptera, Staphylinidae)

142. Beitrag zur Kenntnis der Steninen

Volker Puthz

Abstract

PUTHZ, VOLKER: Weitere nordostpaläarktische *Stenus*-Arten (Coleoptera, Staphylinidae). (Additional species of *Stenus* from the northeastern parts of the Palaearctic Region.) — Notulae Entomol. 54:107—113. 1974.

Description of *Stenus shilovi* sp.n. from the Komi ASSR, revalidation of *S. paululus* L. Bck spec. propr. (= *S. campbelli* Puthz syn.n.) and notes on the morphology of *S. amurensis* Eppelsheim and *S. innuptus* Eppelsheim. Faunistic notes on 15 additional species.

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Jüngst erhielt ich neues *Stenus*-Material aus der nördlichen und nordöstlichen Sowjetunion, das unsere Kenntnisse von der Verbreitung mancher paläarktischer Arten erweitert. Die Ergebnisse lege ich hier vor, darunter eine für die Wissenschaft neue Art und eine Revalidisierung sowie ein neues Synonym.

Für die Ausleihe der besprochenen Insekten und für Überlassung von Belegstücken für meine Sammlung danke ich den Kollegen Dr. Fr. Janczyk (Wien), Dr. W. F. Shilov (Leningrad), Dr. H. Silfverberg (Helsinki), Dr. A. Tichomirova (Moskau) und Dr. R. L. Wenzel (Chicago).

Stenus hyperboreus J. Sahlberg

1 ♂, 2 ♀♀: Polarer Ural: Predg.Pad'-jagach-lusju, Tundra, 12. VII. 1971, Shilov.

Eine aus der nördlichen Holarktis (auch Nordamerika) bekannte Art.

Stenus lustrator Erichson

1 ♂: Komi ASSR: Uchtinski-Bezirk, 31. V. 1965, Shilov.

Eine nord- und mitteleuropäische Art, von SAHLBERG (1880:76) aus Westsibirien genannt.

Stenus proditor Erichson

1 ♀: Komi ASSR: St. Anschor, 25. VI. 1972, Shilov.

Eine in Nord- und Mitteleuropa sowie Sibirien (SAHLBERG 1880:77; POPPIUS 1909:14) lebende Art.

Stenus amurensis Eppelsheim

Stenus amurensis EPPELSHEIM 1886: 43 f.

Der ♀ — Holotypus dieser nach einem Unikum aus Ostsibirien (Blagowestschensk) beschriebenen Art lag mir mehrfach aus dem Wiener Museum vor. Nach längeren Studien der Arten dieser Verwandtschaftsgruppe habe ich endlich auch das zugehörige Männchen gefunden, das im folgenden beschrieben wird:

Mittelschienen mit starkem Apikaldorn, Hinterschienen ohne solchen Dorn; Hinterschenkel mit ziemlich starkem Basalzahn. Metasternum breit eingedrückt,

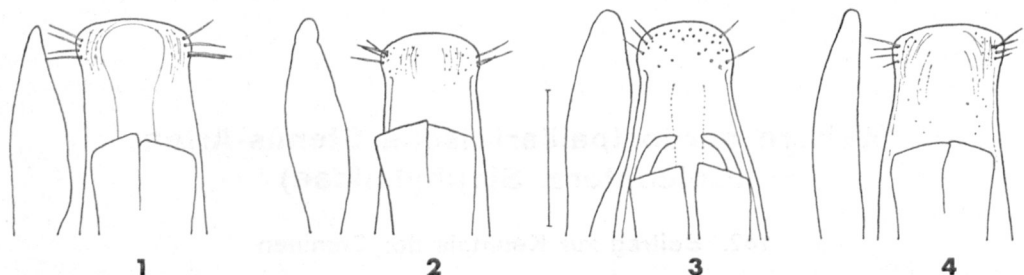


ABB. 1—4: Ventralansicht des Aedeagusapex (wie im Präparat gelegen, rechte Paramere weggelassen): *Stenus amurensis* Epp. (Irkutsk) (1) — *Stenus shilovi* sp.n. (Holotypus) (2) — *Stenus paululus* L. Bck. (Pavl. Jakut.) (3) — *Stenus innuptus* Epp. (Irkutsk) (4). Mass-Stab = 0,1 mm.

fein und sehr dicht auf glänzendem Grund punktiert, dicht behaart. 3. Sternit mässig fein und mässig dicht, in der Mitte etwas weitläufiger, auf glänzendem Grund punktiert, 4. — 6. Sternit längs der hinteren Mitte ziemlich breit spiegelglänzend, die Seiten schmal, lang-abstehend beborstet. 7. Sternit mit breitem und tiefem Eindruck in der Hinterhälfte, der Eindruck von der vorderen Sternitmitte deutlich abgesetzt, im Eindruck eng quermaschig genetzt, Eindruckseiten mit schmaler Borstenbürste, der Hinterrand breit und flach (fast so breit wie das 1. und 2. Hintertarsenglied zusammen lang) ausgerandet. 8. Sternit mit dem in der *proditor-sylvester*-Verwandtschaft üblichen Apikalausschnitt, median in den hinteren zwei Dritteln abgeflacht und unpunktet. Aedeagus (Abb. 1) dem des *innuptus* Epp. (Abb. 2) sehr ähnlich, die Parameren aber kürzer.

Von *innuptus* Epp. unterscheidet sich *amurensis* Epp. durch viel hellere Beine, weniger tief eingesenkte Stirn (flacher erhobene Stirnmitte), etwas längeres Pronotum ohne oder mit nur spurenhafte erkennbarer mittlerer Längsfurche, etwas kürzere Punktierung und wenig dichtere Punktierung, von *shilovi* n.sp. und *S. paululus* Bck. wie unten angegeben, von allen durch die Sexualcharaktere.

Ohne sicher determiniertes Vergleichs-

material oder Männchen ist eine Determination der Arten dieser Artgruppe äusserst schwierig!

Material: ♀ — Holotypus; 1 ♂, 1 ♀: Irkutsk, W. E. Jakovlev (Field Museum Chicago, coll.m.); 1 ♀ (abweichend): Jakovlevka Spas.u.Ussur.kr., 24. V. 1926, im Gebiet des Dorfes, Filipjev.

Stenus (s.str.), *shilovi* sp.n.

♂-Holotypus: UdSSR: Polarer Ural: Fluss Sob' (km 106) Shilov leg.

Diese neue Art gehört in die Verwandtschaft des *proditor* Er. und ist diesem auch sehr ähnlich.

Schwarz, mässig glänzend, ziemlich grob und dicht punktiert, mässig deutlich behaart. Fühlerbasis und -keule schwarz, die Mittelglieder schwarz-braun. 1. Tasterglied gelb, 2. braun, 3. geschwärzt. Beine schwarz, die Schienen und Tarsen kaum heller. Oberlippe schwarz, wenig dicht beborstet.

Länge: 3,0—3,6 mm.

Der Kopf ist erheblich schmaler als die Elytren (27:33), seine ziemlich breite Stirn besitzt zwei nur flache, aber deutliche Längsfurchen, ihr Mittelteil ist so breit wie jedes der Seitenstücke, flach-rund erhoben, erreicht deutlich das Niveau des Augeninnenrandes. Die Punktierung ist wenig fein und dicht, der mittlere Punktdurchmesser liegt etwas über dem basalen Querschnitt des 3. Fühlergliedes, auf den Stirnseiten (abgesehen von einer kleinen Partie neben

dem hinteren Augeninnenrand) sind die Punktzwischenräume kleiner als die Punktradien, in der Stirnmitte können sie fast Punktgrösse erreichen.

Die kurzen Fühler erreichen zurückgelegt nicht den Hinterrand des Pronotums.

Das Pronotum ist so lang wie breit (23), etwa in der Mitte am breitesten, nach vorn flachkonvex, nach hinten deutlich konkav verengt; ein Schrägeindruck lateral in der Hinterhälfte. Die Punktierung ist ziemlich grob, sehr dicht, manchmal etwas rugos, insgesamt etwas gröber als am Kopf, die Punktzwischenräume sind deutlich kleiner als die Punktradien.

Die Elytren sind viel breiter als der Kopf (33:27), knapp breiter als lang (33:31), ihre Seiten hinter den eckigen Schultern gerade, ganz hinten flach eingezogen, ihr Hinterrand ist flachrund ausgerandet (Nachtlänge : 27). Eine breite und flache Nahtdepression und ein kurzer Schultereindruck sind erkennbar. Die Punktierung ist deutlich gröber als am Pronotum, etwas flacher, ebenfalls dicht, der mittlere Punktdurchmesser entspricht gut dem grössten Querschnitt des 3. Fühlergliedes; in der Innenhälfte der Elytren, besonders vorn, sind die Punktzwischenräume mehrfach grösser als die Punktradien, auf der übrigen Elytrenfläche deutlich kleiner.

Das mässig breite Abdomen ist nach hinten deutlich, aber nicht stark verschmälert, die mässig breiten Paratergite tragen eine dichte Punktreihe, die basalen Querfurchen der ersten Tergite sind tief und tragen drei Kiele, das 7. Tergit besitzt einen apikalen Hautsaum (die Art ist geflügelt). Die Punktierung ist mässig fein und dicht, auch vorn feiner als auf der Stirn, die hinteren Tergitmitten sind deutlich unpunktiert.

An den wenig schlanken Beinen sind die einfachen Hintertarsen gut vier Fünftel schienenlang, ihr 1. Glied ist

deutlich, aber wenig länger als das Endglied.

Die ganze Oberseite ist flach genetzt.

Männchen: Schenkel etwas gekault, Hinterschenkel mit der Andeutung eines Basalzahnes; Mittelschienen mit deutlichem Apikaldorn, Hinterschienen zur Spitze gebogen, ohne Dorn. Metasternum median mässig eingedrückt, mässig fein und mässig dicht auf flach genetztem Grund punktiert. 3. Sternit vor dem Hinterrand schmal geglättet beziehungsweise weitläufiger als an den Seiten punktiert. 6. Sternit in der Hinterhälfte breit eindruckartig abgeflacht, in der hinteren Mitte — wie die Vordersternite — auf kleiner Fläche unpunktiert, Eindruckseiten lang, etwas konvergent beborstet. 7. Sternit in der Hinterhälfte mit breitem Eindruck, dieser punktfrei, quer genetzt, die Eindruckseiten scharf erhoben, abstehend beborstet, Sternithinterrand flach und breit (etwa so breit wie das 1. und 2. Hintertarsenglied zusammen lang) ausgerandet. 8. Sternit in der Mitte der vorderen zwei Drittel unpunktiert, aber genetzt, am Hinterrand etwas flacher und breiter als bei *proditor* Er. ausgerandet. Aedoeagus (Abb. 2), ähnlich wie der des *innuptus* Epp., der Apex des Medianlobus jedoch etwas schmaler.

Stenus shilovi n.sp., den ich herzlich seinem Sammler, Herrn Dr. Shilov (Leningrad) dediziere unterschneidet sich von *proditor* Er. durch schmäleren Kopf, viel flachere Stirnfurchen, insgesamt weitläufigere Punktierung der Stirn, gröber punktierte Elytren, dichter punktierte Tergitseiten, erheblich kürzere Hinterschienen und die Sexualcharaktere, von *amurensis* Epp. durch deutlich weitläufiger punktierte und etwas weniger eingesenkte Stirn, fehlende Spur einer mittleren Längsfurche am Pronotum, dunklere Beine, kürzere Hinterschienen und die Sexualcharaktere, von *paululus* Bck. durch deutlich weniger

dichte Punktierung von Stirn und Elytren, fehlende Spur einer mittleren Längsfurche des Pronotums, deutlicher unpunktierte hintere Tergitmitten, dunklere Beine, kürzere Hinterschienen und die Sexualcharaktere (*shilovi* ähnelt in der Ventralauszeichnung mehr dem *paululus* als dem *proditor*, unterscheidet sich von *paululus* aber durch die Auszeichnungen des 7. und 8. Sternits), von *innuptus* Epp. durch viel flachere Stirn, deutlich weniger dichte Stirn- und Elytrenpunktierung, fehlende Spur einer mittleren Längsfurche des Pronotums und die Sexualcharaktere.

Holotypus im Zoologischen Museum Leningrad.

Stenus paululus L. Benick spec. propr.

Stenus paululus L. BENICK 1924: 251 f.

Stenus innuptus; PUTHZ 1966: 298 f., p.p.

Stenus campbelli PUTHZ 1973: 204 fig. syn. nov.

In meinem 133. Beitrag habe ich diese Art nach wenigen Stücken aus Alaska unter dem Namen *campbelli* kurz beschrieben. Ein jüngst von mir vorgenommener Vergleich mit dem Holotypus (♀) von dem von mir fälschlich zu *innuptus* synonym gesetzten *paululus* Bck. zeigte, dass es sich hier um eine, holarktische Art handelt. Eine ausführliche Beschreibung, angefertigt nach paläarktischen Stücken, gebe ich hier.

Stenus paululus gehört in die oben erwähnte Verwandtschaftsgruppe, sie sieht den Arten *amurensis* Epp. und *innuptus* Epp. sehr ähnlich, weswegen sie auch bisher mit ihnen verwechselt wurde (auch PUTHZ 1966 p.p.).

Schwarz, matt, ziemlich grob und äussert dicht, zum Teil rugos punktiert, wenig deutlich behaart. 1. Fühlerglied schwarz, 2. dunkelbraun, die restlichen Glieder braun, Keule manchmal etwas dunkler. 1. Tasterglied gelb, 2. rötlich-gelb, 3. bräunlich. Beine rötlichbraun, die Schenkel zur Spitze dunkler, am

Knie schwarzbraun. Oberlippe schwarz, mässig dicht beborstet.

Länge: 2,7—3,5 mm.

Paläarktisches Material: ♀ — Holotypus: Tschita; 2 ♂♂: Lena med., Ytyk-haja, Poppius (Mus. Helsinki, coll.m.); 1 ♂: Lena, Ust-Aldan, Poppius (Mus. Helsinki); 1 ♂: Oi-Besb, u.s. Pavlovskoe Jakut.okr., Jakutskaja eksped. A.N., Teichufer, 29. VI. 1925, Bianchi (Field Mus. Chicago).

Der Kopf ist deutlich schmaler als die Elytren (28:33; beim Bianchi-Stück nur 28:31), die wenig breite Stirn zeigt zwei ziemlich tiefe Längsfurchen, ihr Mittelteil ist deutlich schmaler als jedes der Seitenstücke, mässig erhoben, erreicht das Niveau des Augeninnenrandes. Die Punktierung ist ziemlich grob und dicht, der mittlere Punktdurchmesser entspricht etwa der Grösse des mittleren Querschnittes des 3. Fühlergliedes, die Punktzwischenräume sind deutlich, meist viel kleiner als die Punktradien.

Die kurzen Fühler erreichen zurückgelegt nicht den Hinterrand des Pronotums.

Das Pronotum ist etwa so breit wie lang, etwa in der Mitte am breitesten, nach vorn flachkonvex bis gerade, nach hinten deutlich konkav verengt. In der dorsalen Längsmittle befindet sich ein schmaler, ziemlich flacher Eindruck, der in der dichten Skulptur des Pronotums nicht sehr auffällt; ein Schrägeindruck lateral in der Hinterhälfte. Die Punktierung ist wenig gröber als am Kopf, äusserst gedrängt, zumindest vorn und hinten rugos.

Die Elytren sind deutlich breiter als der Kopf, kaum breiter als lang, ihre Seiten hinter den eckigen Schultern kaum erweitert, fast gerade, hinten flach eingezogen, der Hinterrand ist flach und breit ausgerandet (Nahtlänge: 28). Naht- und Schultereindruck sind kurz und flach. Die Punktierung ist gut so grob wie am Pronotum, sehr dicht, am basalen Deckenabfall und in der Aussenhälfte etwas rugos; die Punktzwischen-

enräume sind überall kleiner als die Punktradien.

Das ziemlich breite Abdomen ist nach hinten deutlich, aber nicht stark verschmälert, die ziemlich breiten Paratergite tragen eine Reihe grober Punkte, die basalen Querfurchen der ersten Tergite sind tief und dreikeilig, das 7. Tergit trägt einen deutlichen apikalen Hautsaum (die Art ist geflügelt). Die Punktierung ist wenig fein und dicht, deutlich, aber nicht sehr viel, feiner als die der Stirnseiten, auf den Tergitseiten sind die Punktabstände meist kleiner als die Punktradien, in den Tergitmitten, besonders apikal, grösser, selten bis punktgrös.

An den schlanken Beinen sind die ungelappten Hintertarsen etwa drei Viertel schienenlang, ihr 1. Glied ist nur wenig länger als das letzte.

Die ganze Oberseite ist genetzt.

Männchen: Schenkel nicht gekielt, Hinterschinkel mit feinem, spitzem Basaldorn (diesen hatte ich früher übersehen), Mittelschienen mit deutlichem Apicaldorn, Hinterschienen gerade, ohne Dorn. Metasternum flach eingedrückt, fein und mässig weitläufig auf glänzendem Grund punktiert, Punktzwischenräume meist grösser als die Punkte (bei den Stücken aus Alaska meist kleiner). 7. Sternit am Hinterrand mit einer relativ schmalen (etwa so breit wie das 2. Hintertarsenglied lang), etwa halbkreisförmigen Ausrandung, davor abgeflacht. Keine deutlichen Sterniteindrücke, keine längere Seitenbeborstung, keine punktfreien Partien. 8. Sternit ohne Eindruck, in der hinteren Mitte fein und dicht punktiert. Aedoeagus (Abb. 3 und Abb. 11, PUTHZ 1973) (= Abb. 2, PUTHZ 1966). Die zwischen beiden Abbildungen zu bemerkenden Unterschiede gehören meines Erachtens, bei gleichen Ventral- und Beinauszeichnungen der Männchen, in die Variationsbreite der Art.

Stenus paululus L. Benick unterschei-

det sich von *innuptus* Epp. durch hellere Beine, weniger tiefe Stirnfurchen, noch dichtere Punktierung und die Sexualcharaktere, von *amurensis* Epp. ebenfalls durch noch dichtere Punktierung und die Sexualcharaktere. Weibchen des *paululus* lassen sich nur bei Vorhandensein sicher determinierten Vergleichsmaterials, und auch dann nur schwer, von *amurensis* trennen.

Stenus innuptus Eppelsheim

Stenus innuptus EPPELSHEIM 1893: 55 f.

Stenus innuptus; L. BENICK: 1924: 250

Stenus innuptus; PUTHZ 1966: 298 f., p.p.

Von dieser bisher oft verkannten Art gebe ich eine neue Beschreibung der männlichen Sexualcharaktere nach einem mit den beiden Typen verglichenen Männchen von Irkutsk: Hinterschenkel wenig gekielt, ohne Dorn an der Basis, Mittelschienen mit deutlichen Apikaldorn, Hinterschienen gerade und ohne Dorn. Metasternum breit eingedrückt, ziemlich grob und dicht auf genetztem Grund punktiert. Sternite 3—5 mässig grob und dicht auf fast erloschen-genetztem Grund punktiert. 6. Sternit längs der Mitte flach eingedrückt, in der Mitte schmal punktfrei, an den Seiten länger beborstet. 7. Sternit mit breitem Eindruck in der Hinterhälfte, darin punktfrei, aber flach genetzt, Hinterrand breit und flach (etwa so breit wie das 1. Hintertarsenglied lang) ausgerandet. 8. Sternit in den hinteren zwei Dritteln der Mitte deutlich abgeflacht, längs der Mitte punktfrei, aber genetzt. Aedoeagus (Abb. 4), dem des *amurensis* sehr ähnlich, die Parameren aber deutlich kürzer.

Stenus mammops Casey

Von dieser kürzlich für die Paläarktis nachgewiesenen Art liegen mir vor: 2 ♂♂, 2 ♀♀: Central Tchukotka, Mazkovo, in the deposits of Anadyr River, 8.—10. VIII. 1971, A. Tichomirowa.

Stenus humilis Erichson

1 ♂, 1 ♀: Uchta, Komi, am Uchta-Fluss, 19. VI. 1971, Shilov; 1 ♂: Komi ASSR, St. Am-schor, 25. VI. 1972, Shilov.

Diese Art ist im Norden in der nord-westlichsten Sowjetunion vorhanden, von Sibirien meldet sie SAHLBERG (1880: 77), von anderen Orten POPPIUS (1908: 12; 1909: 19 f.), im Museum Helsinki befindet sich noch 1 ♂ von Archangelsk, Frey.

Stenus assequens Rey

1 ♂: Uchta, Komi, am Ufer des Uchta-Flusses, 19. VI. 1971, Shilov.

Aus Sibirien mehrfach (z.B. SAHLBERG 1880 sub nom. *nanus*) gemeldet.

Stenus strandi L. Benick

1 ♂: Komi ASSR: St. Sejda, 21. VI. 1965, Shilov; 1 ♂, 2 ♀♀: Polarer Ural: am Sob'-Fluss, 8. VII. 1971, Shilov; 1 ♂: Polarer Ural: Weg nach Elets, 8. VII. 1971, Shilov; 4 ♂♂, 6 ♀♀: Polarer Ural: 100 und 101 km am Luns, 9. VII. 1971, Shilov; 17 ♂♂, 9 ♀♀: Komi ASSR: Vorkuta, 27. VI. 1972, Shilov und Lodanov; 1 ♂, 5 ♀♀: Komi ASSR: Vorkuta, Rubnik, 23. VI. 1972, Shilov.

Diese nordpaläarktische Art war bisher nur von wenigen Orten der Sowjetunion bekannt (BENICK 1937: 186).

Stenus coriaceus Puthz

1 ♀: Polarer Ural: 100 km am Luns, 9. VII. 1971, Shilov; 1 ♂, 1 ♀: Polarer Ural: Pad'-jaga, Tundra, 12. VII. 1971, Shilov;

Von dieser Art waren bisher nur die Typen (Shigansk und Kanin) bekannt. Ein ♂ von Shigansk, Poppius, das in der Beschreibung nicht genannt wurde, fand sich unter Material, das ich aus dem Museum Helsinki zur Untersuchung erhielt.

Stenus latipennis J. Sahlberg

1 ♂, 1 ♀: Polarer Ural: Ufer rug'ja, Tundra, 7. VII. 1971, Shilov; 1 ♂, 1 ♀: Polarer Ural: am Sob'-Fluss, 8. VII. 1971, Shilov; 1 ♀: Polarer Ural: Weg nach Elets, 8. VII. 1971, Shilov; 1 ♂, 2 ♀♀: Komi ASSR: Vorkuta, 27./28. VI. 1972, Shilov.

Diese sibirische Art ist schon von verschiedenen Fundorten bekannt. Sie

kommt auch in der Nearktis vor (Belege aus dem North West Territory, dem Yukon Territory und Alaska im Museum Ottawa und in Washington) und gehört somit zu den holarktischen *Stenus*-Arten!

Stenus cautus Erichson

1 ♀: Uchta, Komi, 15. VI. 1971, Shilov; 1 ♂: Uchta, Komi, am Uchta-Fluss, 19. VI. 1971, Shilov.

Eine weit über die Paläarktis verbreitete Art, die nur in der äusserst westlichen Paläarktis fehlt.

Stenus immarginatus Mäklin

1 ♀: East Tchukotka, Janrakinnot, under stones at the warm places near hot stream, 29. VII. 1971, Tichomirova; 1 ♂, 2 ♀♀: East Tchukotka, Janrakinnot, in the *Dicranum* at warm places.

Stenus audax J. Sahlberg

1 ♀: Komi ASSR, Vorkuta, 28. VI. 1972, Shilov.

Von dieser nordpaläarktischen Art waren bisher nur 5 Stücke bekannt. Ich habe 1972 darauf hingewiesen, dass diese Art — wie *bifoveolatus* — Basalkiele an den Tergiten zeigt (SAHLBERG: »ecarinatis«). Ein in coll. Benick befindliches Männchen von Kanin und das hier gemeldete Weibchen zeigen aber keine solchen Kiele oder nur Andeutungen eines Kieles. *Stenus audax* scheint also in diesem Merkmal zu variieren (was erst grösseres Material mit Sicherheit nachweisen liesse). Von seinem Aedoeagusbau her ähnelt *audax* auch mehr den Arten um *ganglbaueri* (ohne Kiele) als denen um *bifoveolatus*.

Stenus sibiricus J. Sahlberg

1 ♂, 1 ♀: Polarer Ural: Uchta, Komi, Flugplatz, berenjag, 10. VI. 1971, Shilov; 1 ♀: ibidem, 15. VI. 1972, Shilov; 1 ♀: Central Tchukotka, Markovo, in the deposits of Anadyr river, 8.—10. VIII. 1971, Tichomirova.

Eine weit über die Holarktis verbreitete Art.

Stenus palustris Erichson

1 ♂, 1 ♀: Uchta, Komi, Flugplatz, el'nik, 22. VI. 1971, Shilov; 5 ♂♂, 1 ♀: Uchta, Komi, Flugplatz, 24. VI. 1971, Shilov; 1 ♀: Komi ASSR: St. Amschor, 24. VI. 1972, Shilov.

Eine nordpaläarktische Art, von SAHLBERG (1880:81) und POPPIUS (1908:12; 1909:20) schon aus Sibirien gemeldet.

Stenus flavipalpis Thomson

1 ♂: Uchta, Komi, Flugplatz, el'nik, 22. VI. 1971, Shilov; 1 ♂, 2 ♀♀: Uchta, Komi, Flugplatz, 24. VI. 1971, Shilov.

Dieses sind bisher die nordwestlichsten Funde dieser westpaläarktischen Art.

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The *Javesella* *discolor* group (Homoptera, Delphacidae) of North Europe, with description of a new species

Larry Huldén

Abstract

HULDÉN, LARRY: The *Javesella* *discolor* group (Homoptera, Delphacidae) of North Europe, with description of a new species. — Notulae Entomol. 54: 114—116. 1974.

A new species, *Javesella* *bottnica* sp. n., is described in the *J. discolor* group, which also contains *J. discolor* (Boheman) and *J. simillima* (Linnavuori). Drawings of genitalia and some distributional data, including two maps, are provided.

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When examining undetermined material of Auchenorrhyncha at the Zoological Museum of Helsinki, I found several specimens of a new form belonging to the *Javesella* *discolor* group, which also contains *J. discolor* (Boheman, 1847) and *J. simillima* (Linnavuori 1948). Investigation of the material and comparison with the closely related species revealed that the new characters are constant and distinctive, and I therefore regard the specimens as a new species.

The genitalia have been drawn free hand at X 100 magnification with a Wild M 5. The measurements were made at X 50 magnification with the same microscope.

Javesella *bottnica* sp.n.

♂ length: 2.00—2.46 mm (f. brach.), 3.8 mm (f. macr.). Head black to blackish brown with pale yellowish brown carinae. Antennae segments yellowish brown with reddish brown bases. Pronotum with light yellow carinae and posterior edge, between the carinae varying in colour from black to light yellow, with dark patches. Scutellum blackish brown. Femora at base and listal segment of tarsi dark. Wings brownish.

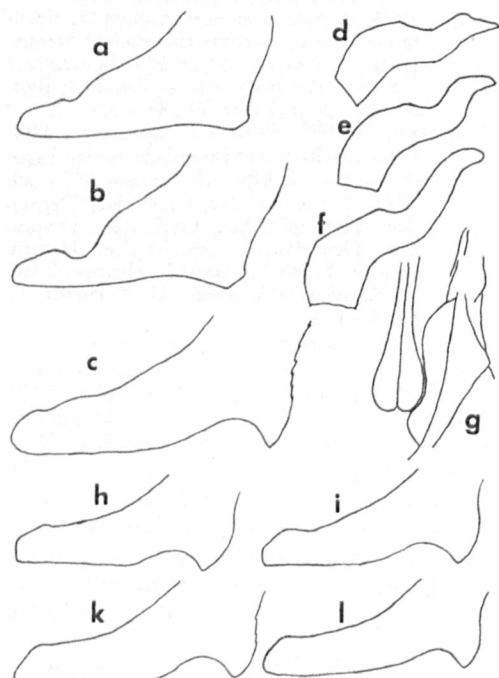
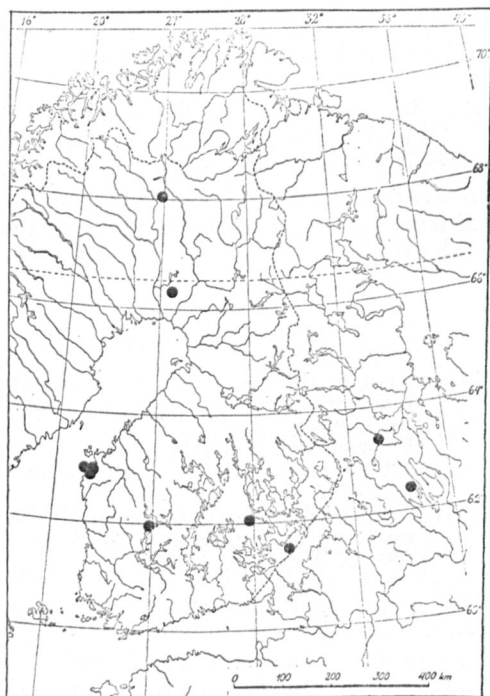


FIG. 1. Genitalia of males: Penis of a) *Javesella* *simillima*, b) *J. bottnica*, c) *J. discolor*; stylus of d) *J. simillima*, e) *J. bottnica*, f) *J. discolor*. g) Lateral lobe of female of *J. bottnica*. Penis of males of *J. discolor* from h) Norway (Helligskoven), i) Sweden (Abisko), k) Norway (Dovre, Fokstua), l) Switzerland. (d and f from LINNAVUORI 1948.)

MAP 1. *Javesella bottnica* sp.n.

Genitalia as in Fig. b, e. ♀ length: 2.66 mm in f. brach., unknown f. macr. in similar to male, but with larger light patches and light spots on last three segments of abdomen. Lateral lobes as in Fig.??

J. bottnica is most reliably separated from the closely related *J. discolor* and *J. simillima* on the genitalia of the male (Figs. a—f). Moreover, *J. bottnica* (f. brach.) has more elongated wings than *J. discolor* or *J. simillima*. Index of length and width of wing (short-winged males): *J. bottnica* 1.97 (1.79—2.32), *J. discolor* 1.57 (1.43—1.82), *J. simillima* 1.64 (1.57—1.68).

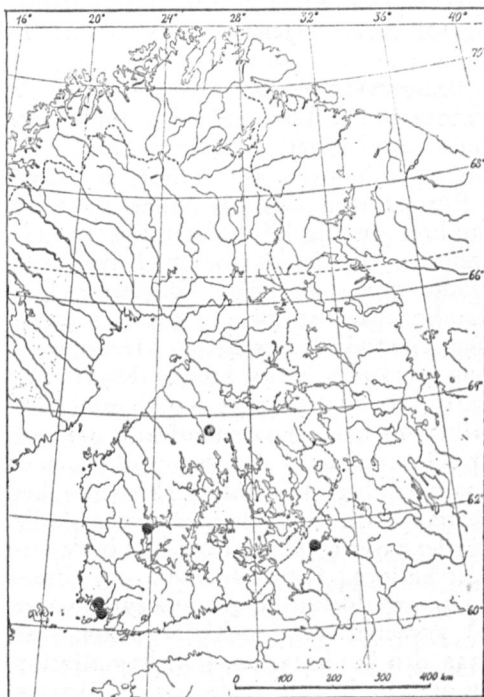
Reliable characters are not yet known for the female. The only female was captured in the same place as some males of *J. bottnica* and, as no males of the

other species are known at present from that locality, the female was connected with *J. bottnica*. According to LINNA-VUORI (1948), the female of *J. discolor* is dark and the female of *J. simillima* is light. However, that of *J. discolor* seems to vary from light to dark.

LINNAVUORI (1969) gives the following length data: *J. discolor* ♂ 2.25—2.70 mm, ♀ 2.7—3.1 mm (f. brach.), 4.0—4.5 mm (f. macr.), *J. simillima* ♂ 1.5—1.6 mm, ♀ 2.0—2.1 mm (f. brach.).

The new species seems to have a large distribution in Eastern Fennoscandia. At the moment the following records are known to me (Map 1):

Finland: Ta: Ruovesi, 1 ♂ f. brach., J. Sahlberg; Kl: Parikkala, 1 ♂ f. brach., Hellén; Oa: Petalax 1940-07-02, 1 ♂ (holotype no 12424 in Helsingfors Museum) + 3 ♂♂, 1 ♀ f. brach., Håkan Lindberg; Bergö 1940-06-15...17,

MAP 2. *Javesella simillima* (Lv.).

2 ♂♂ f. brach., Håkan Lindberg; Maxmo 1946-06-04...14, 2 ♂♂ f. brach., Håkan Lindberg; Sb: Jorois 1924-07-25, 1 ♂ f. macr., P. H. Lindberg; Ob: Rovaniemi 1950-07-03, 1 ♂ f. brach., 1951-06-22, 1 ♂ f. brach., Håkan Lindberg; Lk: Pallasjärvi 1932-07-07, 1 ♂ f. brach., Wegelius. USSR: Karelia Kon: Dvoretz, 1 ♂ f. brach., Günther; Kpoc: Paadana, 1 ♂ f. brach., J. Sahlberg.

Javesella simillima (Linnavuori, 1948)

Male genitalia as in Fig. a, d.

Specimens in Zoological Museum of Helsinki: Finland: Ab: Pargas 2 ♂♂ f. brach., Reuter; Ta: Ruovesi 1 ♂ f. brach., J. Sahlberg. The penis of the last-mentioned specimen is deformed, but otherwise accords well with the description of *simillima*.

USSR: Karelia Kl: Jaakkima, 2 ♂♂ f. brach., J. Sahlberg. LINNAVUORI (1948 and 1969) mentions this species from Finland: Ab: Raisio; Sb: Kiuruvesi; USSR: Karelia Kl: Jaakkima. Map 2.

According to NAST (1972), it is also found in Estonia and northern Siberia (Taymyr).

Javesella discolor (Boheman, 1847)

Male genitalia as in Fig. c, f. The apex of the penis varies in shape (Figs. h—l). According to NAST (1972), this species is distributed over almost the whole of the Palaearctic.

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Litteratur

GÜNTHER, KURT K. 1974: Staubläuse, Psocoptera. Tierwelt Deutschlands 61. 314 S., 437 Abb. — Jena. Gustav Fischer. Pris 69:— M.

BADONNELS psocopterdel av Faune de France som utkom 1943 har varit den enda användbara bestämningstabellen för stövsländorna som funnits att tillgå i Europa men den har redan på flere punkter hunnit bli fullständigt föråldrad och det är därför med synnerlig glädje man kan hälsa GÜNTHERS förnämliga bearbetning i gruppen i serien Die Tierwelt Deutschlands. Denna volym av serien är av samma höga standard som de tidigare volymerna och GÜNTHER har här sammanfattat det som är känt om de mellaneuropeiska arternas morfologi och biologi på ett mycket förtjänstfullt sätt. För specialisten skulle värdet ytterligare ökat om han hade anfört källorna för de enskilda uppgifterna han meddelar. Några nya synpunkter på systematiken innehåller boken inte utan den är snarast en god kompilation av det som hittills publicerats. GÜNTHER

har bibehållit stövsländornas klassiska system och inte gått in för SMITHERS kladistiska system, kanske beroende på att arbetet redan var slutfört då SMITHERS 1972 publicerade sin stora utredning över psocopterernas systematik.

Gruppen har hittills varit en av de mest försummade i Europa och så också i Norden. En av orsakerna har helt säkert varit svårigheten att uppbringa användbar bestämningslitteratur och det är att hoppas att GÜNTHERS arbete genom att slopa denna svårighet också befördrar intresset för gruppen, där t.ex. arternas utbredning i Europa fortfarande är relativt bristfälligt känd. I GÜNTHERS arbete behandlas alla från Norden hittills rapporterade arter och den kan alltså ypperligt användas också hos oss.

Martin Meinander

Fünf neue Nematinen-Arten aus Finnland (Hymenoptera, Tenthredinidae)

Eitel Lindqvist

Abstract

LINDQVIST, EITEL: Fünf neue Nematinen-Arten aus Finnland (Hymenoptera, Tenthredinidae). (Five new species of Nematinæ from Finland.) — Notulae Entomol. 54:117—120. 1974.

Descriptions of *Pristiphora albomarginata* sp. n., *P. thalictricola* sp. n., *P. rufigiventris* sp. n., *Pteronidea polita* sp. n. and *Pachynematus aequalis* sp. n.

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Pristiphora albomarginata sp. n.

♀. Schwarz. Oberlippe und Clypeusrand weiss. Pronotumecken, Tegulae, die umgebogenen Enden der Tergite, die Trochanteren und das Hinterleibsende weisslich. Sternite, Schenkel, Tibien und Tarsen blassbraun, Hinterschenkel etwas schwarz gestriemt. Obere Orbiten schmal bräunlich, untere Orbiten blassbraun. Flügelgeäder dunkelbraun, Costa und Stigma blassbraun, Stigmenränder verdunkelt.

Kopf fein und dicht punktiert, etwas glänzend. Vorderkopf nicht gewölbt, Hinterkopf stark verengert. Scheitel etwa zweieinhalbmals so breit wie lang, seitlich deutlich begrenzt. Stirnfeld rundlich, Seitenkiele undeutlich, Stirnwulst gut entwickelt, nicht eingekerbt. Clypeus gerade. Fühler fadenförmig, etwas länger als Hinterleib, drittes Glied so lang wie das vierte, fast so lang wie Längsdurchmesser eines Netzauges. Thorax fein und dicht punktiert, glänzend. Schildchen und sein Anhang unpunktiert und stark glänzend. Klauen tief gespalten. Hintersporne gleichlang, so lang wie Tibienende breit. Sägescheide viermal so dick wie die gleichlangen Cerci, fast gerade abgestutzt, mit einem feinen Mittelzahn und die Ecken mit je einem Haar-

büschel. Sägezählung Abb. 1. Länge etwa 5 mm.

Der Holotypus, am 13. VI. 1967 in Lkcm: Pallastunturi im nördlichen Lappland von O. Ranin erbeutet, befindet sich in meiner Sammlung.

Diese neue Art ist durch den weissen Clypeusrand, den bleichbraunen Bauch und die tief gespaltenen Klauen gut gekennzeichnet und kann mit einer anderen *Pristiphora*-Art kaum verwechselt werden.

Pristiphora thalictricola sp. n.

♀. Schwarz. Oberlippe, Tegulae und grösstenteils Beine gelblichbraun. Trochanteren weiss. Hüften schwarz, Hinterschenkel wenig schwarz gestriemt und Hintertarsen verdunkelt. Flügel ziemlich klar, Geäder schwarz, Costa und Stigma bräunlich, der hintere Stigmenrand etwas dunkler.

Kopf fein und dicht punktiert, etwas glänzend, hinten deutlich verengert. Scheitel etwa dreimal so breit wie lang, etwas gewölbt, durch undeutliche Seitenfurchen begrenzt. Stirnfeld und Stirnwulst schlecht entwickelt. Clypeus gerade. Fühler fast fadenförmig, etwa so lang wie Hinterleib, drittes Glied fast so lang wie das vierte, ein wenig kürzer als

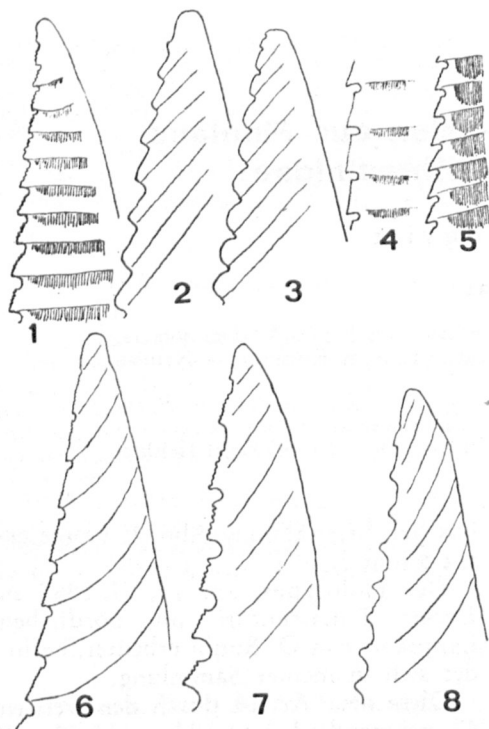


ABB. 1—3 Sägespitzen folgender *Pristiphora*-Arten: 1 *P. albomarginata* sp. n., 2 *thalictricola* sp. n. 3 *P. thalictvivora* Lqv. ABB. 4—5 Sägezähne aus der Mitte der Säge folgender *Pteronidea*-Arten: 4 *P. polita* sp. n., 5 *P. viridescens* Cam. ABB. 6—8 Sägespitzen folgender *Pachynematus*-Arten: 6 *P. aequalis* sp. n., 7 *P. angustatus* Lqv., 8 *P. clitellatus* Lep.

Längsdurchmesser eines Netzauges. Mesonotum und Hinterleibsrücken kaum skulptiert, ziemlich glänzend. Mesopleuren glatt und stark glänzend. Hinter-sporne so lang wie Tibienende breit, die Mitte des Metatarsus nicht erreichend. Klauen mit feinem Subapikalzahn. Sägescheide typisch *Pristiphora*-artig ausgerandet. Sägezählung Abb. 2. Länge 5,5 mm.

♂. Färbung und skulpturelle Merkmale hauptsächlich wie beim ♀. Fühler jedoch viel kräftiger und komprimiert. Genitalplatte schwarz. Penisvalve Abb. 9. Länge 5 mm.

Der Holotypus, das ♀, am 2. VI. 1968 e larva, und der Allotypus, das ♂, am 4. VI. 1969 aus ex ovo-Larven gezogen, befinden sich in meiner Sammlung. In drei Tagen 5.—7. 1967 fand T. Kontuniemi in Ks: Kuusamo, Oulanka im südlichen Teil Nordfinlands an *Thalictrum simplex* v. *boreale* (Nyl.) Sr. Nematinen-Larven, die er zur Zucht mit nach Hause nahm. Im folgenden Jahre schlüpften ♀♀ und ♂♂ aus. Die ♀♀ wurden zur Eiablage an *Thalictrum flavum* benutzt, und so ergab die Zucht im folgenden Jahre 1969 wieder Imagines beider Geschlechter.

P. thalicticola steht der von mir (1962:110) beschriebenen *P. thalictvivora* am nächsten, weicht aber wie folgt von ihr ab:

Die ♀♀ gleichen einander äusserlich dermassen, dass sie unter Berücksichtigung eventueller Variabilität kaum voneinander unterschieden werden können. Dagegen ist der Unterschied zwischen den Sägezählungen dieser Arten sehr deutlich (Abb. 2 und 3). Das ♂ von *thalicticola* weicht äusserlich sehr deutlich vom *thalictvivora*-♂ ab zufolge seiner fast fadenförmigen Fühler, während beim *thalictvivora*-♂ die Fühler viel kräftiger und komprimiert sind, so dass sie von der Seite gesehen doppelt so breit wie bei *thalicticola* sind. Noch ist hervorzuheben, dass bei *thalicticola* die Genitalplatte und die Fühler ganz schwarz sind, während bei *thalictvivora* die Genitalplatte blassbraun und die Fühler auf der Unterseite dunkler braun sind. Zwischen den Penisvalven der betreffenden Arten kann kein besonderer Unterschied entdeckt werden. *P. thalicticola* ist ein Repräsentant der *P. aquilegiae* Voll. -Gruppe, die ich (1962:105—111) besprochen habe.

Pristiphora rufiventris sp. n.

♂. Schwarz sind Fühler, Kopf, Thorax, Hinterleibsrücken und grösstenteils

Hinterhüften. Oberlippe, Tegula, Beine rötlichgelb. Bauch gleicherweise gefärbt, jedoch mit diffusen dunklen Flecken. Mittlere Tergite bräunlichgelb gerandet. Flügel schwach getrübt, Geäder dunkelbraun, Costa und Stigma bräunlich.

Vorderkopf fein und dicht punktiert, etwas glänzend, Scheitel und Schläfen fast unpunktirt, stärker glänzend. Hinterkopf ein wenig werengt. Scheitel doppelt so breit wie lang, undeutlich abgegrenzt. Stirnfeld flach, schlecht begrenzt. Clypeus gerade. Fühler ein wenig länger als Hinterleib, borstenförmig, alle Glieder fast gleich lang, drittes Glied unbedeutend kürzer als Längsdurchmesser eines Netzauges. Mesonotum fast unpunktirt und ziemlich glänzend, Mesopleuren unpunktirt und stark glänzend. Mesonotum-Mittellappen mit gut entwickelter Längsfurche. Schildchenanhang undeutlich vom Schildchen abgegrenzt. Hinterleibsrücken fein striiert, glänzend. Klauen mit deutlichem Subapikalzahn. Innerer Hintersporn länger als Tibienende breit. Genitalplatte breit gerundet. Penisvalve Abb. 10. Länge 5 mm.

Der Holotypus, am 11. VI. 1968 aus einer in Ks: Kuusamo an *Thalictrum* gefundenen Larve von J. Kangas gezogen, befindet sich in meiner Sammlung.

Wegen des Aussehens der Penisvalve und der rötlichen Beine ist der Schluss zu ziehen, dass *rufiventris* zur *P. aquilegiae* Voll.-Gruppe gehört. Sie ist die einzige mir bekannte Art dieser Gruppe mit rötlichem Bauch. Durch dieses Merkmal muss das noch unbekannte ♀ gleichfalls gekennzeichnet sein.

Pteronidea polita sp. n.

♀. Grosseiteils bleich (als lebend grün). Mesopleuren, Mesosternum, Pronotumecken, Bauch, Hinterleibsende und Beine ausser den weisslichen Trochantären gelblich blassbraun. Tegulae weisslich, Orbiten, Infraantennalhöcker, Schläfen und grösstenteils Schildchen

gelblichbraun. Schwarz sind ein grosser Stirnfleck, Scheitel, Hinterkopf grossteils, Fühler, drei breite Striemen am Mesonotum, Schildchenanhang, Hinterschildchen und am Hinterleibsrücken eine an der Basis breite und zur Spitze immer schmalere Längsstrieme. Flügel klar, Geäder braun, Costa und Stigma gelblich blassbraun.

Kopf sehr fein punktiert, parallelseitig und etwas glänzend. Fühler dünn, zweieinhalbmals so lang wie Kopfbreite, drittes Glied unbedeutend kürzer als das vierte, ein wenig kürzer als Längsdurchmesser eines Netzauges. Scheitel fast dreimal so breit wie lang, seitlich gut begrenzt und in der Mitte mit einer Längsfurche. Stirnfeld undeutlich begrenzt, Stirnwulst gut entwickelt, nicht eingekerbt. Interantennalgrube länglich und deutlich. Clypeus flach ausgerandet. Mesonotum stark glänzend, Mesopleuren etwas schwächer. Der längere Hintersporn so lang wie Tibienende breit, ein Drittel des Metatarsus erreichend. Klauen tief gespalten. Sägescheide zugespitzt, doppelt so lang wie an der Basis dick. Sägezählung Abb. 4. Länge 6 mm.

Der Holotypus, am 10. VI. 1973 in Ab: Vihti, Siikajärvi von V. Karvonen erbeutet, befindet sich in meiner Sammlung.

Durch die schwarzen Fühler unterscheidet sich *polita* von den allermeisten bleichen *Pteronidea*-Arten, die mehr oder weniger blassbraune Fühler haben. Eine Verwechslung kann eigentlich nur mit *Pteronidea viridescens* Cam. in Frage kommen, welche Art gleichfalls schwarze Fühler hat. Von dieser Art weicht *polita* durch kürzeren Hintersporn ab, denn bei *viridescens* ist dieser Sporn anderthalbmals so lang wie Tibienende breit und erreicht die Mitte des Metatarsus. Die Sägezählungen der betreffenden Arten sind ganz verschieden. (Abb. 4 und 5).

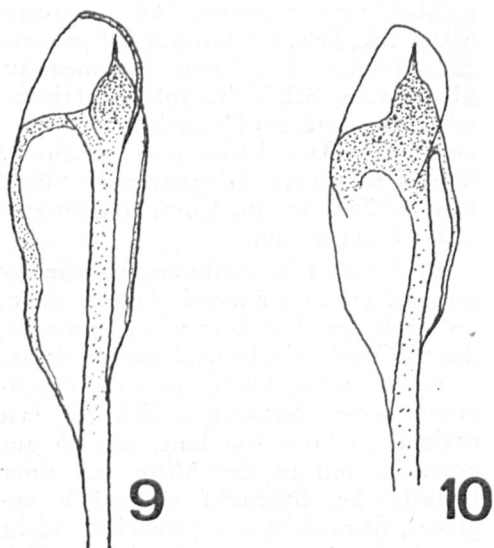


ABB. 9—10 Penisvalven folgender *Pristiphora*-Arten: 9 *P. thalicticola* sp. n., 10 *P. rufiventris* sp. n.

Pachynematus aequalis sp. n.

♀. Gelblich oder bräunlich blassbraun. Schwarz sind ein Stirnfleck, Fühler, drei breite Striemen am Mesonotum, Schildchen ausser der Spitze, Schildchenanhang, Mesosternum, Hinterhüften, Metapleuren, Hinterleibsrücken ausser der Spitze, Sägescheide. Pronotumecken, Tegulae, Beine und Bauch etwas heller als die bräunlicheren Teile am Kopf und Thorax. Flügel klar, Geäder braun, Costa und Stigma farblos.

Kopf fein punktiert, schwach glänzend, hinter den Augen etwas erweitert. Scheitel undeutlich abgegrenzt, zweieinhalbmal so breit wie lang, ein wenig gewölbt. Stirnfeld rundlich, durch schwache Kiele begrenzt. Stirnwulst besser entwickelt, breit eingekerbt und zwei Höcker bildend. Clypeus mässig tief ausgerandet. Fühler dünn, etwas länger als Hinterleib, drittes Glied deutlich kürzer als das vierte, so lang wie Längs-

durchmesser eines Netzauges. Mesonotum-Mittellobe schwach punktiert, ziemlich flach, Seitenloben fast unpunktet und stärker glänzend. Mesopleuren glatt und glänzend. Hinterleibsrücken fast unskulptiert, glänzend. Hintersporen kurz, ein wenig kürzer als Tibienende breit, ein Drittel des Metatarsus erreichend. Klauen mit feinem Subapikalzahn. Sägescheide kürzer als Cerci, etwa viermal so dick wie sie, fast gleichbreit, stumpf, mässig lang behaart. Sägezählung Abb. 6. Länge 6,5 mm.

Der Holotypus, am 5. VII. 1938 in USSR: Kola Halbinsel, Petsamo, Yläluostari von V. Karvonen erbeutet, befindet sich in meiner Sammlung.

Ein zweites, in Le: Kilpisjärvi im nördlichsten Finnland und gleichfalls von Karvonen erbeutetes Exemplar liegt noch vor.

Aus den beiden Stücken geht hervor, dass die Färbung von *aequalis* nicht konstant ist. Bei dem einen Exemplar ist das Schildchen fast ganz schwarz, während bei dem anderen ein Drittel bräunlich ist. Der Schildchenanhang wieder ist bei dem einem Stück ganz braun, bei dem anderen aber schwarz.

P. aequalis gleicht einigermaßen *P. clitellatus* Lep., ist aber etwas kleiner und schlanker. Viel grösser ist die Gleichheit jedoch mit *P. angustatus* Lqv.. Diese Übereinstimmung ist so gross, dass ich keinen zuverlässigen äusseren Unterschied aufgeben kann. Zwischen den Sägezählungen (Abb. 6 und 7) ist der Unterschied jedoch so auffällig, dass *aequalis* auf keinen Fall mit *angustatus* (und auch nicht mit *clitellatus* Abb. 7) verwechselt werden kann.

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***Drosophila eskoi* sp. n., a new species of the *Drosophila obscura* group (Diptera, Drosophilidae)**

Seppo Lakovaara and Pekka Lankinen

Abstract

LAKOVAARA, S. & LANKINEN, P.: *Drosophila eskoi* sp. n., a new species of the *Drosophila obscura* group (Diptera, Drosophilidae). — Notulae Entomol. 54:121—124. 1974.

Description of *D. (Sophophora) eskoi* from northern Scandinavia. The species is closely related *D. bifasciata* Pomini and *D. ambigua* Pomini.

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In June 1972 Mr. Risto Alatalo sent us a sample of *Drosophila* from Ylitorio, northwestern Finland. In it we found some flies which closely resembled *Drosophila bifasciata* Pomini and *D. ambigua* Pomini (POMINI 1940, BURLA 1951, BASDEN & HARNDEN 1956). Study of their morphological characters and enzyme electrophoresis showed them to belong to an unknown species of the *Drosophila obscura* group. Since then more than 50 individuals of this species have been captured in several localities in northern Scandinavia. The new species is difficult to distinguish from *D. bifasciata* and *D. ambigua* on the basis of its morphology, although fairly reliably differentiating characters exist, especially in the external genitalia of both sexes. On the other hand, it is easily distinguished from the two species by enzyme electrophoresis (see, e.g. LAKOVAARA & al. 1972). Genetically it is rather distantly related to these two species. Information on the genetic distance between the new species and other members of the *D. obscura* group will be published elsewhere.

In giving the new species the name

eskoii, we wish to honour our respected teacher, the famous Finnish geneticist Professor Esko Suomalainen, and to acknowledge our indebtedness for his constant support and help.

The description of *Drosophila (Sophophora) eskoi* sp. n. is as follows:

♂ — Body length about 2.6 mm and wing length about 2.9 mm. In *D. bifasciata* the corresponding dimensions are 2.4 mm and 2.7 mm, and in *D. ambigua* 2.2 mm and 2.5 mm. Body colouring and chaetae dark grey or black as in *D. bifasciata*, the body colouring of *D. ambigua* being more brownish. Mesonotum with three light longitudinal stripes as in *D. bifasciata*. The mesonotum of *D. ambigua* differs in having two dark stripes on a brownish field instead of three light stripes on a dark field. Acrostichal hairs in eight rows as in *D. bifasciata* and *D. ambigua*. Aristae of antennae with three dorsal and two ventral branches in addition to the terminal fork, as well as about eight smaller branches. Branching of aristae in the two other species the same. No significant differences apparent in the orientation or dimensions of the oral bristles

of the three species either. The width of the jowls is about the same and the costal index almost exactly the same (2.9) in all three species. The fairly strong costal fringe extends in *D. eskoi* 1/3 to 1/2 of the distance between the 2nd and 3rd longitudinal wing veins. The corresponding values in *D. bifasciata* and *D. ambigua* are 1/3 and 1/2, respectively. There are two sex combs on the fore legs of *D. eskoi*, as in all the species of the *D. obscura* group. The number of pegs varies from 8 to 10 in the proximal sex comb of *D. eskoi* and from 7 to 9 in the distal one. In *D. bifasciata* the corresponding numbers are 7—10 and 6—9, and in *D. ambigua* 8—9 and 9. The morphology of the other legs of *D. eskoi* is about the same as in *D. bifasciata* and *D. ambigua*. The male genitalia of the three species are compared in the Figure. The clearest difference between them lies in the general appearance of the surstyli. In addition, the comb of the surstylus in *D. bifasciata* is slightly longer than in the other two species. In *D. bifasciata* the number of teeth in the combs varies from 8 to 10, whereas in *D. eskoi* and *D. ambigua* it is 7 or 8. The difference in the shape of the tip of the penis (central processus of penial elements) between these three species is very clear-cut.

♀ — Body length about 3.0 mm and wing length 3.1 mm. In *D. bifasciata* the corresponding dimensions are 2.6 mm and 2.7 mm and in *D. ambigua* 2.7 mm and 3.1 mm. Body colouring and chateae as in male. Abdominal tergites black as in European *D. bifasciata*, i.e. without yellow lateral spots. The shape of the ovipositor and the position of the bristles on it are reliable diagnostic characters of the species, and the general appearance of the ovipositor resembles that of *D. obscura* more than that of *D. bifasciata* or *D. ambigua* (Figure). The other characters are about the same

in all three species. E.g. the costal index of the wing is about 3.1 in all of them.

We have not yet succeeded in rearing this species in the laboratory, so that nothing is known about the morphology of the eggs, larvae or pupae. The chromosome number and the structure of polytene chromosomes of the new species are also unknown.

Holotype, ♂, Finland Ob: Oulu Piki-saari, 1973-06-18 (P. Lankinen). Specimen in vial (type No. 14269) in the collection of the Zoological Museum of Helsinki. Paratypes, ♂♂ and ♀♀, from Sweden LuLpm: Jokkmokk, Messaure, 1973 (J. Viramo).

As mentioned above, numerous specimens of this species have been identified by the morphological characters and also by enzyme electrophoresis. The localities so far recorded for *D. eskoi* are as follows:

Finland: Ob: Ylitornio, 7 ♂♂ 1972 (R. Alatalo); Oulu Hietasaari, 1 ♂ 1972 (J. Lumme); Kemi Rytikari, 1 ♀ 2 ♂♂ 1973 (J. Lumme); Oulu Pikisaari, 1 ♂ 1973 (P. Lankinen); — Ok: Paltamo, 1 ♂ 1972 (A. Oikarinen); — Lkem: Pelkosenniemi Pyhäjärvi, 1 ♀ 1972 (A. Saura); Muonio Kätkäsuvento 2 ♀♀ 1 ♂ 1973 (J. Lumme); — Ks: Kuusamo Oulanka, 1 ♀ 1972 (S. Lakovaara); 2 ♂♂ 1973 (P. Lankinen).

Sweden: LuLpm: Stora Sjöfallet, Gällivare, 4 ♀♀ 12 ♂♂ 1972 (A. Saura); Jokkmokk Messaure, 3 ♀♀ 9 ♂♂ 1973 (J. Viramo); Jokkmokk Kvikkjokk 3 ♂♂ 1973 (A. Saura); Jokkmokk, 5 ♂♂ 1973 (A. Saura).

Norway: AK: Setskog, Mortegropa, 1 ♀ 1 ♂ 1973 (P. Lankinen).

Both *D. eskoi* and *D. bifasciata* have been collected with the same traps consisting of malt bait (LAKOVAARA & al. 1969) in northern Scandinavia. This and some other observations show that *D. eskoi* apparently lives sympatrically with *D. bifasciata* in the north. *D. am-*

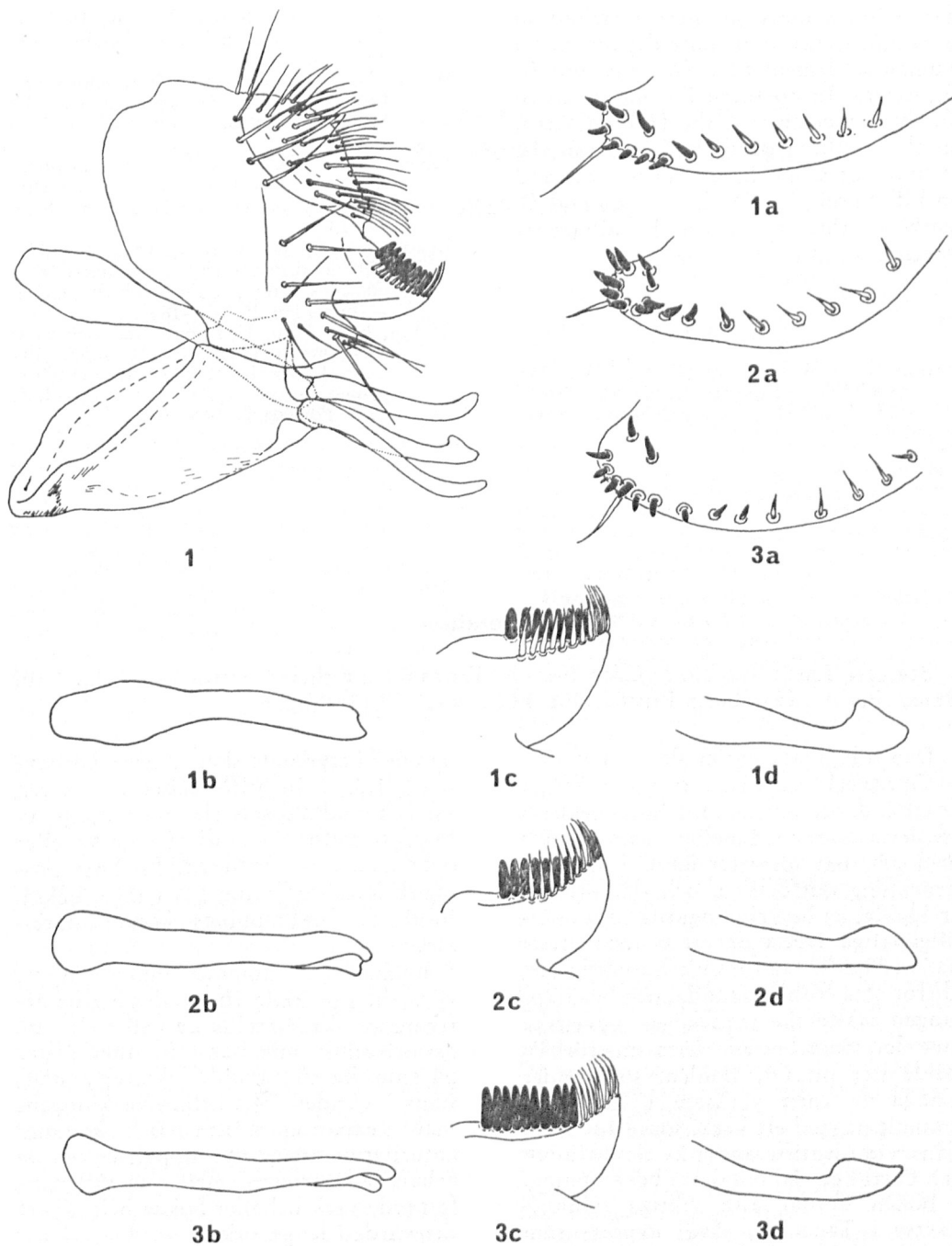


FIGURE. 1, male genitalia of *D. eskoii*, side view. Numbers 1 refer to *D. eskoii*, numbers 2 to *D. ambigua* and numbers 3 to *D. bifasciata*. The letter a shows ovipositor, b apodeme of penis, c surstylus and d tip of penis.

bigua has a more southern distribution area and seems to be more dependent on human settlement than *D. eskoi* and *D. bifasciata*. In northern Europe it has so far been met only in the Helsinki area, in the southern part of Finland, in the vicinity of Copenhagen, Denmark, and in Edinburgh, Scotland. *D. eskoi* and *D. ambigua* thus appear to be allopatric species.

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Litteratur

BOHLEN, EBERHARD 1973: Crop Pests in Tanzania and their Control. — Verlag Paul Parey, Berlin / Hamburg. Pris 64 DM. 142 sidor, 252 färgbilder.

Den tillämpade entomologins betydelse för utvecklingen i det tropiska Afrika är erkänd, och mycken forskning bedrivs på detta område. Emellertid är till och med arternas identitet ännu i stor utsträckning outforskad, och där arterna är kända, är beskrivningarna ofta svårtillgängliga. Detta gör att skadeinsekterna, med undantag för de allra viktigaste, alltför ofta förblir okända, och bekämpningen måste ske med högst ospecifika metoder. Som bot på detta missförhållande har nu Dr. Bohlen, som under många år varit verksam i Tanzania, kommit ut med ett verk, som både skall tjäna vid identifierandet av skadedjuren och därtill ge råd om deras bekämpning.

Boken upptar alla viktiga odlingsväxter i Tanzania, såväl export- som husbehovsväxter, och räknar sedan upp

de mest betydande skadedjuren på växten i fråga. Identifierandet av djuren skall huvudsakligen ske med hjälp av färgfotografier över djuren själva eller över angripna växtdelar. En kort ekologisk karakterisering ges i regel också, följd av bekämpningsrekommendationer.

Bohlens bok kommer säkerligen att vara till stor hjälp för studiet av de afrikanska skadeinsekterna, speciellt på ort och ställe, men också för specialister på tropiska växtätande insekter annanstans i världen. Skadedjursforskningens snabba expansion i östra Afrika kommer naturligtvis att ge nya uppgifter om de behandlade arterna, men som sammanfattande verk behåller boken helt säkert sitt värde i långa tider.

Hans Silfverberg

Entomologiska Föreningen i Helsingfors Helsingin Hyönteistieteellinen Yhdistys

Verksamhetsberättelse för år 1973

Under verksamhetsåret har föreningen haft sina ordinarie månadsmöten tredje onsdagen i mars, april, maj, oktober och november. Årsmötet hölls den 21 februari samt ett med Suomen Hyönteistieteellinen Seura gemensamt möte den 21 september. Mötesplatsen har varit Universitetets Zoologiska Institut.

Den förnyelse i mötesprogrammen som planerats år 1972 tog sig uttryck i att trenne möten, till vilka allmänheten inbjudits, ägnades mer populära temata. Före dessa möten hade allmänheten aktiverats genom artiklar i Hufvudstadsbladet. Resultatet var positivt och ett av dessa möten besöktes av 63 personer. I medeltal deltog i årets möten 29 personer.

Följande föredrag ingick i mötesprogrammen: Med.lic. MARKUS BRUMMER-KORVENKONTIO: Artropodit arbovirusen levittäjinä (21.2). — Agr.lic. SVANTE EKHOLM: Coloradoskalbaggen och dess eventuella möjligheter att invadera Finland (28.3). — Mag. PEHR EKBOM: Pälsängrarnas biologi och förekomst i Finland (28.3). — Doc. KAURI MIKKOLA: *Hepialus humulin* elintavoista (18.4). — T.f. prof. WALTER HACKMAN: Giftiga insekter (16.5). — Stud. VESA VARIS: European Invertebrate Survey-symposio 1973 Englan-nissa (17.10). — Dr. HARRY KROGERUS, agr.lic. SVANTE EKHOLM och t.f. prof. WALTER HACKMAN: Det 16. Nordiska Entologmötet i Århus 1973 (17.10). — Dr. RAINER ROSENGREN: Myrtornas samhällsliv (21.11). — Stud. JYRKI MUONA: Muurahaispesissä esiintyvät kovakuoriaiset (21.11). Programmet för det med Suomen Hyönteistieteellinen Seura gemensamma mötet i september utgjordes av diskussion om insekttillgången under sommaren 1973 samt fristående vetenskapliga meddelanden. Diskussionen inleddes av agr.lic. SVANTE EKHOLM och dr HARRY KROGERUS.

Vid mötena gjordes inalles 9 vetenskapliga meddelanden: Agr.lic. SVANTE EKHOLM 2, stud. MATTI AHOLA, mag. PEHR EKBOM, doc. JOUKO KAISILA, prof. TAHVO KONTUNEMI, dr HARRY KROGERUS, stud. JYRKI MUONA och dr STEN STOCKMANN envar ett meddelande.

En exkursion företogs till Lammi Biologiska Station den 24—26 augusti.

Följande stipendier för entomologisk forskning har utdelats: Åt fil.kand. JUHANI ITÄMIES 500 mk för en undersökning av fjärilfaunan i

Raumo skärgård, åt stud. JYRKI MUONA 500 mk för en undersökning över *Atheta*-arternas utbredning i Finland, samt åt stud. OLOF BISTRÖM och med.kand. EERO HELVE tillsammans 200 mk för insamling av skalbaggar vid Tana älv.

Den under verksamhetsåret tryckta vol. 53 av föreningens tidskrift *Notulae Entomologicae* omfattar 172 sidor. Då Tilgmanns tryckeri från och med år 1973 upphört med vanligt boktryck måste föreningen byta tryckeri och tidskriften har tryckts hos Printaco. Skulden till Tilgmann och ett katastrofalt nedskuret ordinarie stadsunderstöd, från tidigare 12.000 till 7.000 mk, ställde finansieringen av tryckningen inför stora svårigheter. Situationen räddades temporärt av ett extra statsanslag på 7.112 mk.

Föreningen deltar jämte de entomologiska sammanslutningarna i Danmark, Norge och Sverige i utgivandet av tidskriften *Entomologica Scandinavica*, som 1973 utkommit med volym 4 på 327 sidor samt ett supplement om faunan på Surtsey och den till tidskriften nära anslutna Fauna Scandinavica med första volym behandlande flugfamiljen Stratiomyidae.

I det 16. Nordiska Entologmötet, som hölls i Århus, Danmark, 7—9 augusti, deltog flera av föreningens medlemmar.

På initiativ av Suomalainen Tiedekatemia och Finska Vetenskaps-societeten sammankallades representanter för de vetenskapliga samfunden 24.4. till ett möte i Helsingfors för grundandet av en organisation, vars uppgift skulle vara att bevaka föreningarnas intressen i vetenskapspolitiskt avseende, att taga initiativ för befrämjandet av finländsk vetenskap och göra den känd utomlands. Vid mötet företrädde föreningen av vice-ordföranden och sekreteraren. Vid de följande mötena av detta "Tieteellisten seurain neuvosto / De vetenskapliga samfundens råd" skulle föreningarna representeras av ordföranden eller av honom befullmäktigad person.

Till nya medlemmar i föreningen har invalts stud. MIKAELA AHLMAN, ing. ALLAN GRÖNVALL, prof. OLLI HALKKA, dr RAUNO LINNAVUORI, stud. ÖRVIND RINGSGÅRD (Oslo) och stud. EBBE SCHMIDT NIELSEN (Århus).

Styrelsen har sammanträtt 5 gånger och har haft följande sammansättning: Ordförande dr

HARRY KROGERUS, viceordförande prof. MAX V. SCHANTZ, sekreterare t.f. prof. WALTER HACKMAN, skattmästare dipl.ekon. INGMAR RIKBERG, bibliotekarie fil.mag. BO FORSSKÄHL samt övriga medlemmar doc. MARTIN MEINANDER och mag. PEHR EKBOM.

Redaktionskommittén har bestått av: Redaktör doc. MARTIN MEINANDER, bitr. red. doc. SA-

MUEL PANELIUS samt övriga medlemmar agr.lic. SVANTE EKBOM, t.f. prof. WALTER HACKMAN, dr HARRY KROGERUS och fil.lic. HANS SILFVERBERG.

Revisorer har varit prokurist CARL-ERIC REGNELL och mag. BJÖRN FEDERLEY, med.stud. ROLAND SKYTÉN och stud. MARCUS WIKMAN som suppleanter.

Mötesreferat — Kokousselostuksia

Gemensamt möte med Suomen Hyönteistieteellinen Seura — 1973-09-21 — Yhteinen kokous Suomen Hyönteistieteellisen Seuran kanssa.

Det gemensamma mötet hade på sitt program en diskussion om insekttillgången under sommaren 1973. Agr.lic. SVANTE EKHOLM gav en inledande översikt av väderleksförhållandena maj-augusti och förevisade kartor visande distributionen av värden för Långs faktor (nederbörd / temperatur). Härvid framträdde tydligt vilken extrem torka som varit rådande under en lång period juni-juli i södra Finland under den synnerligen varma sommaren med abrupt övergång till kyligt väder under senare delen av augusti.

Dr HARRY KROGERUS redogjorde för sommarens särdrag i fråga om storfjärilarna i Lojo-området. Trots varmt väder hade förekomsten av fjärilar ej varit särskilt rik och av de inalles 650 inom området iakttagna arterna anträffades år 1973 446. Försommarfaunan var något rikare än normalt, men sensommarfaunan i stället fattigare. Arter som förekom talrikare än normalt var bl.a.: *Gonepteryx rhamni*, *Erebia ligea*, *Issoria lathomia*, *Glaucopsyche alexis*, *Hesperia alveus*, *Deilephila galii*, *Pheosia dictaeoides*, *Leucodonta bicoloria*, *Dasychira abietis*, *Apathele alni*, *Calymnia trapezina*, *Catocala adultera*, *C. fraxini*, *Geometra papilionaria*, *Euphyia rubidata*, *Hydrelia testacea*, *Gymnoscelis pumilata*, *Boarmia roboraria* och *Atholmis rubricollis*. Sällsyntare än normalt var *Argynnis aglaja*, *Coenonympha iphis*, *Pergesa elpenor*, *Cerura*-arterna, *Pterostoma palpinum*, *Pygaera timon*, *Noctua pronuba*, *Cirrhia lutea*, *Antitype chi*, *Apamea pabulatricula*, *Iodis putata* och *Spilosoma lubricipeda*. Helt borta var *Parnassius apollo*, *Aporia crataegi*, *Argynnis paphia*, *Limenitis populi*, *Orgyia antiqua* (ej ens larver anträffades), *Apathele cuspis*, *A. strigosa*, *A. aceris*, *Euxoa obeliscus*, *E. tritici*, *E. clavis* och *Leucania comma*. Vissa expansionsarter som under början av 1960-talet försvann har ånyo uppträtt: *Stauropus fagi*, *Eustrotia fasciana* och *Pyrrhia umbra*. Tvenne arter anträffades 1973 nya för Lojo-området: *Discoloxia blomeri* och *Hydroecia ultima*. I fråga om övriga insekter kunde annoteras att bladlöss uppträtt i otrolig mängd och i samband härmed förekom även nyckelpigor, särskilt *Coccinella septempunctata*

synnerligen rikligt. Getingar av släktet *Vespula* förekom mycket sparsamt. — Dos. JOUKO KAISILA mainitsi että *Melithaea aurinia* ja *Glaucopsyche alexis* olivat esiintyneet runsaasti N: Myrskylässä mutta *Euphydryas maturna* sensijaan oli ollut tavallista harvalukuisempi. — Maist. OSMO HEIKINHEIMO kiinnitti huomiota lämpösummaan tärkeänä tekijänä sääsuhteiden vaikutuksessa hyönteisfaunaan. Lämpöä vaativat hedelmäpuuntuholaiset *Laspeyresia pomonella* ja *L. funebrana* olivat aloittaneet lentonsa tavallista aikaisemmin ja toisen sukupolven toukkia esiintyi runsaasti elokuussa lisäten täten huomattavasti hedelmävahinkoja. Ta: Janakkalassa hän ei ollut nähnyt ainoatakaan *Vespula*-suvun ampiaista. — Prof. R. TUOMIKOSKI mainitsi että kuivasta kesästä johtuen sienä on ollut erittäin vähän ja että tämä on vaikuttanut sienisääsäkiin, joita on ollut huomattavasti vähemmän kuin normaalisti. Kylmä sää elokuun lopussa ja syyskuussa on vielä lisännyt epäsuotuista vaikutusta näihin hyönteisiin. — Maist. ANTTI PEKKARINEN totesi kuten Krogerus ja Heikinheimo, että *Vespula*-suvun ampiaiset olivat olleet ennen kesän aikana harvinaisia mutta mainitsi sensijaan että niitä oli yllättävän runsaasti Tanskassa Jyllannissa elokuun alussa. Herhiläistä, *Vespa crabro* oli viime kesänä löytynyt Haukiveden saaristosta ja tämä oli kolmas löytö 1945 jälkeen Suomen nykyiseltä alueelta. — T.f. prof. WALTER HACKMAN päpikade att *Vanessa io* under den milda vintern 1972—73 tydligen kunnat övervintra i S. Finland även på fastlandet och bland annat uppträtt rätt rikligt i juni på N: Tvärminne. — Dos. JOUKO KAISILA mainitsi että lajin talvehtimisestä on olemassa havaintoja. — lis. SVANTE EKHOLM omnämde *Vanessa io* -fynd från N: Pellinge från maj och senare på sommaren. — Dos. EERO KARPPIENEN oli havainnut lajin N: Kulosaareissa heinäkuussa. — Metsäteknikko JAAKKO KANGAS oli loppukesällä ja vielä syyskuun 20. päivänä nähnyt *Pyrameis atalanta* Ta: Pälkäneellä. — Stud. CARL GUSTAV LAGERCRANTZ hade iakttagit *P. atalanta* på sensommaren samt talrika exemplar av *Euphydryas maturna* och *Glaucopsyche alexis* i juni i Bredviken (N: Esbo). — Lääk.lis. ANTTI AALLOLLA oli myös havaintoja *Pyrameis atalanta* Uudelta maalta 1973. — Metsätekn. JAAKKO KANGAS oli

jo edellisenä kesänä havainnut *Pyrrhia umbra-yökkösen* *Ta*: Pälkäneellä ja mainitsi E. Reimanin pyytäneen tätä lajia useamman vuoden aikana *Ab*: Salosta. — Lis. SVANTE EKHOLM redogjorde för den rikliga förekomsten av bladlöss i S. Finland. — Maist. OSMO HEIKINHEIMO totesi että leppäkertut saavuttivat vasta myöhemmin kesällä sellaisia lukumääriä että vaikutus kirvapopulaatioihin oli tuntuva. — Lis. EKHOLM påpekade den rikliga förekomsten av *Syrphus balteatus* i samband med bladlössen, varvid prof. TUOMIKOSKI konstaterade att även andra syrphider uppträtt rikligt under sensommaren i S. Finland. Liknande iakttagelser hade även gjorts av mag. ANTTI PEKKARINEN och t.f. prof. WALTER HACKMAN på Jylland i början av augusti. Dr HARRY KROGERUS relaterade en tidningsuppgift om massförekomst av nyckelpigor på Öland. — Lic. HANS SILFVERBERG visade ljusbilder demonstrerande massförekomst av *Coccinella septempunctata* i N. Tvärminne. — Maist. OSMO HEIKINHEIMO oli havainnut *Coccinella septempunctata*n syöväen omenaä kirvojen puutteessa. — Maist. ANTTI PEKKARINEN mainitsi *Galerucella lineolan* toukkien massaesiintymisestä Norjassa ja maist. OSMO HEIKINHEIMO totesi että *Galerucella nymphæaden* toukat saattavat eräissä olosuhteissa siirtyä syömään mansikan ja suomuuraimen lehtiä. — Lic. SVANTE EKHOLM konstaterade att coloradobaggen ej haft förutsättningar att komma över Finska viken 1973 och att tillbudet beträffande detta skadedjur i år endast gällde några få individer i potatissäckar från Bulgarien. Maist. M. VUHTASAARI tiedusteli hirven täikärpäsien esiintymisestä 1973 ja vt. prof. WALTER HACKMAN ja lääk.lis. ANTTI AALTO mainitsivat tietoja lajin leviämisen länteen päin. Läntisin löytö lienee N: Myrskylä. — Dr STEN STOCKMANN påpekade att cerambycidbaggar förekommit sparsammare i år än föregående sommar i östra Nyland. — Dr HARRY KROGERUS och prof. RISTO TUOMIKOSKI nämnde i detta sammanhang att *Prionus coriarius* förekommit rikligare än vanligt i SW Finland och lic. HANS SILFVERBERG påpekade att fynd av *Monochamus sutor* i norra Finland tydde på en rikare förekomst år 1973.

Yo JYRKI MUONA ilmoitti Suomelle uutena kovakuoriaisen *Mordellistena reitteri*, jonka yo Outi Savolainen oli löytänyt 1973-09-16 N: Tvärminnestä. Lisäksi yo MUONA mainitsi löytäneensä lyhytsipisen *Oxytelus clavatus* Ranskasta.

Prof. TAHVO KONTUNIEMI näytti Suomelle uuden lehtipistiäisen *Pristiphora sootryeni* Lindq. jonka tri J. Viramo oli kasvattanut *Oxytropis campestris*-hernekasvista Ks: Oulungalta. Lajin tähän saakka tuntematon koiras on löytynyt tri V. Karvosen kokoelmasta (Li: Utsjoelta).

Dos. JOUKO KAISILA näytti banaaniin kanssa Suomeen tulleita syntomidiperhosia: *Ceramidea butleri* (Turusta ja Kuopiosta), *Anthochloris*

eriphia (Haminasta ja Oulusta), *Macrocneme* sp. (Helsinki, Tampere, Imatra), *Ctenuchides* sp. (Helsingistä ja Hangosta).

Yo MATTI AHOLA ilmoitti seuraavien lehtipistiäislajien toukkahavaintoja Kosken pitäjältä (*Ta*): *Metallus pumilus*-lajin koverteita *Rubus saxatilis*-lehdissä, *Metallus gei*-koverteita *Geumissa*, *Pseudodineura mentiensi* *Hepatica nobilis*-lehdissä, *Profenusa thomsoni*-koverteita *Betula verrucosassa* sekä *Pamphilus*-lajien toukkia tuomella (mahdollisesti *Pamphilus aucupariae*).

Månadsmöte — 1973-11-21 — Kuukausikokous

Yo VESA VARIS antoi selostuksen European Invertebrate Survey-symposiosta, joka pidettiin Markwood Experimental Stationissa Englannissa.

Dr HARRY KROGERUS och lic. SVANTE EKHOLM redogjorde för det 16. Nordiska Entomologmötet i Århus i augusti 1973 och t.f. prof. WALTER HACKMAN visade bilder från den därpå följande exkursionen till Mols laboratoriet.

Dr STEN STOCKMANN förevisade en för landet ny skalbagge, *Atomaria mongolica* Colin Johnson tagen av Dag Hemdal i Sb: Vehmersalmi 1946-06-18. Arten beskrevs ur Kaszabs material från Mongoliet (insamlat 1966). Enligt JOHNSON är arten även anträffad i Kl: Kirjvalahti i Ladoga-Karelen.

Dr HARRY KROGERUS förevisade de sällsynta fjärilarna *Hydroecia ultima* och *Discoloxia blomeri* tagna av honom senaste sommar i Ab: Karislojo.

Månadsmöte — 1973-11-21 — Kuukausikokous

Dr RAINER ROSENGREN höll ett föredrag om myrornas samhällsliv.

Yo JYRKI MUONA piti lyhyen esitelmän muurahaispesissä esiintyvistä kovakuoriaista. Efter föredragen följde en diskussion i vilken ett tiotal personer deltog.

Lic. SVANTE EKHOLM visade några färgdiapositiv belysande massförekomsten av nyckelpigor i Pellinge sommaren 1973.

Till ny medlem invaldes ing. ALLAN GRÖNWALL, Myrbacka.

Årsmöte — 1974-02-20 — Vuosikokous

Dr GUNNEL CARLBERG höll ett föredrag om biologisk bekämpning av skadeinsekter.

Årsmötesförhandlingarna inleddes med att dr Harry Krogerus valdes till mötets ordförande. Styrelsens årsberättelse för 1973 upplästes (se sid. 125). Skattmästaren redogjorde för föreningens räkenskaper under år 1973. Bibliotekariens avgav

en redogörelse för föreningens bibliotek under verksamhetsåret 1973. Revisionsberättelsen upplästes. Den innehöll ej några anmärkningar och styrelsen och redaktionskommittén beviljades ansvarsfrihet för år 1973.

Styrelsen återvaldes i sin helhet och fick följande sammansättning: Ordf. dr HARRY KROGERUS, viceordf. prof. MAX V. SCHANTZ, sekr. t.f. prof. WALTER HACKMAN, skattmästare dipl.ekon. ING-MAR RIKBERG, bibliotekarie mag. BO FORSSKÄHL samt övriga medlemmar doc. MARTIN MEINANDER och mag. PEHR EKBOM. Redaktionskommittén återvaldes i sin helhet och fick följande sammansättning: Redaktör doc. MARTIN MEINANDER, bitr. red. doc. SAMUEL PANELIUS, övriga medlemmar agr.lic. SVANTE EKHOLM, t.f. prof. WALTER HACKMAN, dr HARRY KROGERUS och fil.lic. HANS SILFVERBERG. Till revisorer valdes fru KIRSTI STOCKMANN och mag. BJÖRN FEDERLEY, med. stud. ROLAND SKYTÉN och stud. MARCUS WIKMAN som suppleanter.

Emedan Statens Naturvetenskapliga kommission i en skrivelse uppmanat Föreningen att om möjligt redan under innevarande år höja prenumerationsavgiften för tidskriften till ett av kommissionen kalkylerat belopp, beslöts att upphäva föregående årsmötes beslut och höja medlemsavgiften för innevarande år till 10 mk och prenumerationsavgiften för medlemmar till 15 mk. För icke medlemmar blir prenumerationsavgiften 40 mk eller i utlandet 10 U.S. dollar. Ständiga medlemmars avgift blir 150 mk. Statens Naturvetenskapliga kommission har uppmanat föreningen att slopa ständiga medlemmars rätt att erhålla tidskriften gratis. Detta förutsätter stadgeändring och kan rimligtvis endast gälla nya ständiga medlemmar.

Yliopp. JYRKI MUONA näytti Suomelle uuden lyhytsiipisen, *Atheta (Philbygra) deformis* Kraatz, jonka LuK Matti Uusitalo oli löytänyt N: Pikku-Huopalahdelta (667:38) 1974-05-04.

Månadsmöte — 1974-03-20 — Kuukausikokous

Mag. BO FORSSKÄHL förevisade tre entomologiska undervisningsfilmer. En behandlade myrsamhället, de tvenne övriga bekämpning av skadeinsekter. Den därpå följande diskussionen inleddes av kommentarer av mag. FORSSKÄHL, som även lämnade uppgifter om utyrning av undervisningsfilmer.

Tvenne nya medlemmar invaldes: Herr RUNE WIDENFALK, och herr HANS HELLBERG.

Månadsmöte — 1974-04-17 — Kuukausikokous

Maist. OSMO HEIKINHEIMO piti esitelmän marjakasvien tuholaisista. — Agr.lic. SVANTE EK-

HOLM höll ett föredrag om fruktträdens skadedjur. Skadedjursproblemet diskuterades på basen av de bägge föredragen och ett tiotal diskussionsinlägg gjordes.

Uusiksi jäseniksi valittiin prof. SULO TOIVONEN, vt. prof. ILMARI PAJUNEN, fil.lic. TERTTU LAITINEN, fil.kand. ILPO RUTANEN, fil.kand. EINO SAVOLAINEN, herra ERKKI VALKEILA sekä herra JUKKA JALAVA Helsingistä.

Opisk. JYRKI MUONA näytti seuraavat Suomelle uudet lyhytsiipiset: *Aleochara obscurella* Grav. Al: Seglinge, *Pycnota paradoxa* M. & R. samasta löytöpaikasta sekä *Atheta marcida* Er. Sa: Ristiina (Olavi Renkonen leg.). Tämän lisäksi yo Muona oli löytänyt Al: Seglingestä harvinaiset lajit *Aleochara grisea* Kr., *A. spadicea* Er. sekä *Bembidion genei illigeri*. N: Kirkkonummelta hän oli löytänyt *Atheta acutangula*-lajin naaraan jota ei ole kuvattu.

Månadsmöte — 1974-05-15 — Kuukausikokous

Yhdistyksen jäseniksi valittiin FM JUHANI SYRJÄNEN, herra JUHANI KATAJALAHTI ja FM KALVERO LAHTIVIRTA.

Meddelades att den lediganslagna stipendiesumman på 1400 mk söktes av följande personer: Doc. KAURI MIKKOLA för en undersökning beträffande melanism hos *Arsilonea albovenosa*, stud. CARL GUSTAV LAGERCRANTZ för insamling av fjärilar i Spanien, FL KARI VEPSÄLÄINEN för studier beträffande habitatspreferens hos *Gerris*-arter i SE-Europa samt stud. JYRKI MUONA för studier beträffande kortvingar av släktet *Atheta* i Lappland. Beslöts på styrelsens förslag att doc. MIKKOLA skulle erhålla 500 mk, lic VEPSÄLÄINEN 400 mk samt stud. MUONA 500 mk.

Prof. LARS V. HAARTMAN hade till föreningen donerat kompletta årgångar av Notulae Entomologicae från 1930-talet fram till 1970 för utdelning åt en yngre medlem av föreningen. På styrelsens förslag tillföll gåvan stud. JYRKI MUONA.

Fil.lic. HANS SILFVERBERG höll ett föredrag om sin entomologiska forskningsresa till Östafrika. Föredraget belystes av ett hundratal bilder.

Dr STEN STOCKMANN anmälde den för landet nya skalbaggen *Cryptophagus pallidus* Sturm. Arten hade av dr STOCKMANN anträffats 1946-11-09 vid sällning av löv och mossor under en asp på Linna gård (N: Vanda). Arten har tagits redan den 1944-04-15 i en källare i Helsingfors av E. Holmquist men kunde då icke identifieras. Exemplaren har bestämts av stud. JYRKI MUONA.

Opisk. JYRKI MUONA teki selkoa Suomen *Meotica*-lajeista (Staphylinidae) ja ilmoitti m.m. maalle uusina *Meotica pallens* Ab: Tenholasta, *M. lobsein* N: Helsingistä sekä *exilliman* Ka: Pyhtäältä ja *Oa: Lappfjärdistä*. (Ks. s. 63).

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Rutssystemsbeteckning för angivande av fyndplats inom biologisk forskning

De naturvetenskapliga museerna, samfunden och föreningarna har kommit överens att inom de biologiska vetenskaperna använda enhetskoordinatsystemet för betecknande av fyndplatser och iakttagelseorter. Det är därför att rekommendera att alla entomologer inför koordinatbeteckningar på de etiketter de låter trycka.

Enhetskoordinatsystemet är benämningen på ett rätvinkligt koordinat- och rutsystem, vars p-axel sammanfaller med meridianen E 27° och som är angivet på de grund- och topografiska kartor i skala 1:20 000 och 1:100 000 som har utkommit efter år 1962, samt på de år 1967 utkomna generalkartorna i skala 1:400 000. Ifrågavarande koordinatsystem anges på de nämnda kartorna med röda (bruna) rutor eller marginalbeteckningar. Enhetskoordinaterna är desamma som de på grundkartorna med svart angivna sifferbeteckningar och rutor, vilkas p-axel sammanfaller med p-axeln i enhetskoordinatsystemet.

Koordinattalet betecknar ett kvadratisk område, vars storlek bestäms av antalet siffror i koordinatbeteckningarna. Områdena kan sammanslås till större eller delas i mindre rutor med decimaler. Därvid är koordinatbeteckningarnas sifferantal i motsvarande grad mindre eller större. Varje rutas decimalindelning sker med siffrorna 0 till 9 nedifrån uppåt och från vänster åt höger. Koordinatbeteckningen är tvådelad. Dess första del anger rutans p-koordinat och dess senare del rutans i-koordinat. Mellan dessa delar kan i skrift användas ett kolon. p-koordinaten börjar alltid med siffran 6 eller 7, vilken betecknar 1 000 km. i:s värde i origo vid p-axeln är 500 km. Antalet siffror i koordinattalen är sålunda alltid udda och p innehåller alltid en siffra mera än i.

Angivande av koordinaterna för en ort eller plats sker med den noggrannhet, som i det aktuella fallet kan betecknas som ändamålsenlig. Om t.ex. platsens läge anges med en noggrannhet av 1 kvadratmil, är koordinattalet 5-siffrigt (t.ex. 669:40 eller 66940). Om angivelsen sker med noggrannheten av 1 ha är koordinattalet 9-siffrigt (t.ex. 66940:4009 eller 669404009). I sammandrag gällande utbredningsuppgifter och i andra därmed jämförbara fall insamlas uppgifterna i regel per grundruta, varmed avses en ruta vars yta är 1 kvadratmil. Vid lokala undersökningar används givetvis mindre rutor.

Utöver platsangivelse baserad på rutsystemet bör platsbeteckningen lämpligen samtidigt även ske med angivande av kommunens, byns, terrängformationers osv. namn, likaså skall beteckningarna för de naturvetenskapliga provinserna fortfarande användas. Vid användningen av kommunernas namn är det skäl att beakta, att kommunnamnet betecknar det område, som kommunen omfattade under det år, under vilket iakttagelsen gjordes.

Finland 669:40

N. Sibbo

24. VII. 1971

Kalle Johansson

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